The price of emigration: estimating the effects of the Mexican diaspora on local prices

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The Price of Emigration:

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June 10th, 2013

Abstract

Using a geographical approach, I exploit the regional (city) variation in the proportion of Mexican households deciding to send a migrant to the U.S across two quinquennial periods to estimate the causal effect of emigration on the local price indices of eight distinct groups of goods and services. To overcome the endogeneity of the emigration decision, I employ an instrumental variables approach that relies on the deep historical roots and high persistence characteristic of Mexican migration. My results show that emigration had a significant negative effect across all price index product classifications. Moreover, they suggested that emigration is more likely to affect non-traded good items and services than tradable products since the magnitude of the negative effect rose when restricting the analysis to the non-tradable good components within each price index classification.

Keywords: Mexican Emigration; Migrant Networks; Historic Migration; Prices; Consumer Price Index; Purchasing Power; Tradable goods, Non-tradable goods

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I am grateful to my supervisors for their disposition to aid in the writing of this paper. I especially would like to thank Professor of Economics Biagio Speciale for his constant support and enthusiasm as well as for all the valuable feedback he provided throughout the project which substantially improved its quality. I also thank the professors participating in the Research Seminars and Workshops for all their valuable comments.

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SECTION 1: Introduction

In a 2012 study, the Pew Research Hispanic Center pointed out that the number of Mexican immigrants in the U.S (12 million at the time) was greater than the amount of immigrants any other country had from all the other countries in the world. The same study asserted that throughout the whole history of the United States, at its core a country of immigrants, the modern era, 20th century, Mexican wave of migrants has by far outnumbered any of the flows from the past, including the 19th century Irish immigration wave. (Pew Hispanic Center, 2012) The record breaking nature of the Mexican diaspora has indisputably attracted the constant attention of policymakers and researchers from both sides of the border, leading to a vast profusion of studies attempting to capture the transnational, multivariate dimensions of the Mexico-U.S migratory phenomenon.

The numerous Mexico-U.S migration case studies have closely followed scholarly trends in the broad migration literature, distinguishing between destination-based and origin-centric analyses. Destination-based studies have concentrated on the impacts of Mexican immigration on the labor market outcomes of migrants and low-skilled natives. However, this paper most directly ascribes to the source-country branch of the literature, which aims to explore the effects that Mexican emigration has on the wellbeing of migrants' communities of origin. The majority of these studies have thus far focused on evaluating the link between Mexican migration and one of the three main determinants of the human development index (HDI): income, education, and health. Another significant share has concentrated on the link between migration and income inequality in Mexico. For example, McKenzie & Rapoport (2007) empirically show that migration reduced inequality among communities with very high migratory prevalence (thus larger migrant networks) and gave some evidence of a Kuznet's curve among communities with lower levels of migration. In another important paper, Prachi Mishra (2004) finds that emigration increased wages in Mexico across all schooling groups with the greatest increase concentrating on high school graduates and individuals with some college formation (12 to 15 years of schooling). Through her findings she suggests emigration as an additional possible explanation for increasing wage inequality in Mexico.

However, by ignoring the possible effects that emigration could have on prices, the literature has failed to capture the extent to which emigration affects real purchasing power, itself another determinant of inequality of opportunity within Mexican migrant sending communities.

To my knowledge few studies have estimated migration's effects on prices. Besides, most of them have had a destination-country bias, focusing on the effect of immigration on prices in migrant recipient localities. For example, Cortes (2008) uses a geographical approach to examine the causal effect of low-skilled immigration on prices of non-traded goods and services in different U.S cities and finds that an increase in the share of low-skilled immigrants in the cities' labor force decreases the price of immigrant-intensive services mainly through a decline in wages. In a related paper, Saul Lach (2007) explores the effects of an unexpected immigrant shock of migrants to Israel and finds, as Cortes, a negative link between immigration and prices which he ascribes to demand side causations related to immigration-induced changes in the composition of consumers. Finally, Frattini (2008) shows that immigration in the UK increased the prices of low-valued tradable goods via demand side mechanisms while at the same time reduced the growth rate in the prices of services and other non-tradables via a reduction in their production costs.

The origin-centric migration literature on Mexico has yet to provide an analogous study of the effects of Mexico's outmigration on local prices. In response to this research gap, this paper estimates the effects that emigration to the U.S has on the consumer price indices of different good and service categories across different localities in Mexico. In line with the literature on immigration and prices, this paper additionally attempts to determine whether the effects are more (or less) pronounced for non-tradable goods and services to helps clarify the potential channels through which the effects most likely run.

To do so, I use city-level price index data on the eight categorical (per object of expenditure) subcomponents that comprise the Mexican consumer price index (CPI). I then exploit the variation in the share of households per city deciding to send a migrant to the U.S within two distinct time periods in order to estimate the potential impact of emigration on local categorical price indices. I run separate regressions for each of the main eight categorical price indices and for two sets of price data: one that considers all items within each category (tradable and non-tradable) and another which only considers their respective non-tradable components.

The main challenge to the empirical strategy is the endogeneity of the emigration variable. The emigration decision is necessarily linked to local conditions; hence, city-level differences in emigration rates are not arbitrary and omitted factors such as adverse shocks to the U.S economy can concomitantly affect Mexican city-price indices and emigration rates, therefore biasing the simple Ordinary Least Squares (OLS) estimations. Another important potential source of endogeneity is the feedback effect of price indices on emigration: households' motivation to send a migrant could be bigger in cities with higher than average categorical price indices.

.To ameliorate the bias, I use the Two Stage Least Squares (2SLS) instrumental variable approach based on an instrument that exploits the strong persistence of Mexico's historical geographic pattern of emigration to the U.S. The instrument predicts the contemporaneous per-state shares of households sending a migrant by distributing the current national levels of emigration among the thirty-two Mexican states according to authors' Woodruff and Zenteno 1955-1959 historic state emigration rates. These historic rates have been widely used in the Mexico-U.S migration literature and reflect the predominant pattern of geographic distribution of Mexican migrants entering the U.S territory during one of the most significant periods in the history of the Mexican diaspora. The logic of the instrument heavily relies on the concept of migrant networks which through social capital formation help reduce the risk to migrate and improve the labor market outcomes of new migrants. This migrant networks and the strong kinship (*paisanaje)* sentiment characteristic of Mexican migrants has self-fed the migratory phenomenon and perpetuated its geographical distribution, ensuring with this the strength of the instrument. Additionally, I perform tests that help validate its exogeneity.

The paper's results revealed that emigration had a significant negative effect on all of the categorical price indices. The observed negative relationship between emigration and prices can be theoretically explained through a *volume of consumers* (consumer base) demand-side effect by which, as the number of consumers shrinks when more households decide to send migrants to the U.S., the resulting reductions in aggregate demand, when unmet by a concomitant shrinkage in supply, put downward pressure on price indices. The negative relationship was observed both when the totality of each category's goods were considered as well as when the analysis focused on their non-tradable components; yet, emigration's downward pressure on prices was greater among the latter set of price indices. The most substantial effects were confined to the price

indices of the categories most highly conformed by luxury or superior goods and services such as the Education & Leisure category and a category encompassing the prices of a series of highly specialized professional services (Other Services Category) both of which tend to be demanded by the most highly educated consumer types. This in turn implies that not only does the absolute reduction in the numbers of consumers drive prices down; but most importantly, it suggests that the key mechanism underlying the negative relationship is found on the ways in which emigration shapes the relative proportions of consumer types per education (income) level in the staying population.

Given the above, the paper's findings have important welfare implications. Firstly, they suggest that prices might rise if the post-2008-U.S recession decline and stagnation of the great Mexican diaspora continues in the time to come. Moreover, they point to yet another way in which the benefits to emigration are unequally distributed among the Mexican population, thus potentially affecting the already uneven distribution of well-being and standards of living across Mexico.

The reminder of the paper is structured as follows. Section 2 will further describe the deep historical roots of the Mexico-U.S migratory phenomenon in order to contextualize the logic of the instrument. It will also present stylized facts that will help understand the mechanisms underlying the relationship between emigration and prices. Section 3 will present the paper's data sources and limitations as well as some descriptive statistics and trends observed in the key variables within the specific period under study. Section 4 will outline the different theoretical mechanisms through which emigration would be expected to affect prices. Section 5 describes the empirical framework and further explains the endogeneity bias as well as the ways in which the instrument corrects for it. Section 6 presents the major findings and their welfare implications. Section 7 verifies the robustness of the results and Section 8 concludes.

SECTION 2: Historic Outlook
Continuity & Change in the Migratory Phenomenon

Before directly assessing whether emigration affects local prices in Mexico, in this section I contextualize the Mexico-U.S Migratory Phenomenon in order to aid in the understanding of the logic behind the instrument I will use to control for the endogeneity of the emigration decision. Additionally, the presentation of some past and present stylized facts surrounding the patterns of emigration to the U.S will help to better understand the mechanisms at play behind the relationship between emigration and prices and thus clarify the interpretation of the results I present in latter sections.

2.1 Origins & Historic Evolution:

The two distinctive features of the Mexico-U.S migratory phenomenon are its deep historical roots and its high degree of persistence. The historical origins of the migration flows can be traced as far back as 1885 when the first rail lines from the then emerging U.S economy reached the Mexican South West[1]. Labor migration from China and Japan had stopped and Mexican workers began to be actively recruited, primarily by the U. S. mining and farming sectors, from the turn of the century onwards. (Munshi, 2003) For the greater part of the 20th century, the historical epicenter of emigration to the U.S was comprised of nine west-central states, with about a third of all the pioneer migrants coming from the three core states of Jalisco, Michoacán and Guanajuato.[2] Throughout the century, the magnitude of the flows experienced ups and downs related to both the specific socio-economic needs of the U.S and to the developmental and demographic transformations taking place in Mexico.

The episodic evolution of origin and destination based push and pull factors has led social scientists to identify four main phases within the long history of Mexican immigration to the U.S. In the first quantitatively significant period (1920's Flood Tide period), the consequences of the first world war and the restrictions the U.S had imposed to European migrants allowed for

[1] At the time the Mexican border states were relatively unpopulated forcing U.S industrialists to travel southward towards the more densely populated states of the South-west and West-central region.
[2] The traditional nine historic states are: Aguascalientes, Colima, Durango, Guanajuato, Jalisco, Michoacán, Nayarit, San Luis Potosí and Zacatecas.

the entry of roughly 621 000 (mostly legal) Mexicans to the U.S territory. Then, from the aftermath of the Great Depression until the advent of WWII, Mexican emigration was hindered and many former migrants deported. However, in the early 1940's the bombing of Pearl Harbor motivated the signature of the bilateral Bracero Accord as a provisional measure to help mitigate U.S-wartime labor supply shortages, initiating with it the second great phase of emigration. Over the 22 years of its duration, the Bracero Accord granted legal entry to more than 4.6 million Mexican workers through short-term, agricultural labor work permits. It is estimated that during the period Mexican migrants supplied around 25 % of the farm labor force for traditional host states in the U.S such as California, Arizona, New Mexico, and Texas. (Gamboa, 1990) Eventually, controversy over the program led to its closing in 1964 but this did not halt Mexican immigration; rather, it inadvertently increased the flows, in particular those of undocumented migrants. A third phase of relatively unhindered, copious, illegal and still predominantly temporal immigration flows then ensued and lasting up until 1986 when the Immigration Reform and Control Act (IRCA) led to both the toughening of measures against illegal immigration and to the eventual legalization of about 2.1 million Mexican migrants.[3] Finally, the late 1980's- early 1990's years of structural reforms and macroeconomic liberalization implanted the seeds of the fourth and most recent chapter in the history of Mexican emigration to the U.S.

2.2 Past & Present Stylized Facts:

Since its origins until the late-1960's, Mexican emigration exhibited a high degree of uniformity both in terms of migrants' regional origins and their socio-demographic characteristics. The typical migrant was a working-age male, with very few years of schooling (at most elementary school completed), from a rural (often isolated) locality in a western Mexican state.

In the 1970's, the import substitution model of growth adopted by Mexico led to the chronic deterioration of its trade balance and soon culminated in the 1980's debt crisis. This decade of economic backwardness significantly intensified emigration, doubling the Mexican born population residing in the U.S which rose from 2.2 to 4.4 million (CONAPO, 2010). Among traditional, and especially in non-traditional sending regions, emigration to the U.S emerged as

[3] IRCA, also known as the Simpson Rodino Law, aimed to discourage illegal immigration by reinforcing sanctions against employers of illegal aliens and increasing border patrol staffing (among other provisions). Additionally, even as legalizations authorized under IRCA were not exclusively directed towards Mexican born migrants, they represented 81% of total legalizations.

a release vault to the worsening income prospects of the then much impoverished, higher educated, low-middle class urban dwellers. Furthermore, contrary to the standard factor-price-equalization neoclassical prediction, the series of macroeconomic reforms and liberalization policies undertaken to deal with the 1980's debt crisis did not entail significant Mexico-U.S wage convergence. Rather, trade reform ushered in greater regional wage dispersion with wages in the border states increasing relative to those in the rest of the country.

Simultaneously, the 1980's U.S Immigration Policy had led to the consolidation of migrant networks on the north side of the border both thanks to IRCA's de jure legalization of unauthorized migrants and to increased border surveillance efforts which discouraged illegal migrants from engaging in circular, short-term migration spells. The combination of increased sectorial diversification of the U.S-based demand for foreign labor and migrant networks' boom north of the border with the macroeconomic instability and insufficient job creation in Mexico fostered the complementarity (rather than substitutability) of economic liberalization and migration. Finally, the liberalization reforms crystalized by the North American Free Trade Agreement (NAFTA) led to a continual increase in the returns to skill in Mexico, hence increasing overall wage inequality, and sustaining the incentives to emigrate. (Hanson, 2003)

Thus, by the early 1990s, the patterns proper to the new model of economic growth had consolidated into the modern era of regional outmigration to the U.S. Their main differences with respect to prior periods were:

a) Geographic broadening of sending communities both in terms of state of origin and of type of sending locality with more and more migrants emanating from large urban centers and intermediate-sized cities.[4]
b) Shift away from temporary and circular agricultural migration towards longer-term migration and eventual resettlement thanks to post-IRCA reforms which facilitated women and family-based Mexican immigration.
c) Occupational diversification: expansion of the variety of jobs held by migrants both in Mexico and in the U.S. (gradual replacement of agricultural activities by other low-skill

[4] Emigration from large urban agglomerations swelled in the late 1980's, rising from 15% in 1980-1984 to 27 % in 1985-1989. (U.S Congressional Research Service Report, 2012)

intensive employment types including fast food preparation, personal care services, household cleaning and repair, and manual labor in the construction sector).

d) Increase in the volume of flows (particularly strong during the 1980's and early 1990's, then subsiding as economic conditions improved in Mexico and U.S border security enforcement intensified).

SECTION 3: Data

3.1) Price Data

3.1.1 Data Sources

The literature on migration and prices has focused on evaluating the link between prices and immigration on destination countries. Within this literature, some authors have used price level data (Lach (2007) and Cortes (2008)) while others have relied on price indices (Frattini (2008)).

In line with the latter, this paper employs the categorical price index data of the eight main sub-components used in the construction of the Mexican Consumer Price Index (CPI)[5]. These indices group products included in the nationally-representative consumption basket into categories according to their object of expenditure, the eight categories are: 1)Food, Beverages & Tobacco, 2) Clothing, 3) Furniture, Utensils & Domestic Appliances, 4) Housing, 5) Health & Personal Care, 6) Transportation, 7) Education & Leisure, 8) Other Services (which includes specialized services such as legal counseling, business consulting, design and decoration, and public-administration services).

The CPI's main goal is to measure the evolution of prices of a nationally representative, time-specific basket of goods and services consumed by the average urban Mexican household. To ensure comparability and time consistency, price data is quoted with respect to a base year. At the same time, the set of goods and services to be included in the consumption basket, their categorical breakdown, and their corresponding weights on overall household expenditures, are

[5] The construction of the CPI is exclusively the domain of the Central Bank of Mexico (Banco de Mexico-Banxico) and the National Institute of Statistics and Geography (INEGI).

determined from the most recent (prior to reference year) National Survey of Household Income and Expenditure in Mexico (ENIGH). In this analysis, I use the most up-to-date price series which take 2010 as reference year and use the 2008 ENIGH to build the concomitant consumption basket.

While the ENIGH survey provides municipality level information on households' patterns of consumption, in defining the CPI's consumption basket, authorities only consider the information stemming from localities with more than 15 000 inhabitants (which inevitably excludes the smallest municipalities in Mexico). Once the composition of the basket is defined, prices are directly quoted at establishments in 45 cities (including their greater metropolitan areas) distributed across 7 geographic zones. To overcome the caveats introduced through the limited geographical range of store-level price quotations, the statistical institutes define the 45 cities as compilations of municipalities varying in terms of size (large, medium and small), granted that all have populations beyond 15000-20000 inhabitants. Indeed, before selecting the products comprising the CPI's consumption basket, the ENIGH questionnaires are classified according to the 45 city-municipality-conglomerates. For the largest cities (Mexico City, Monterrey, Guadalajara, Puebla), the conglomerate is constructed to represent the expenditures of households from the municipalities exclusively located in their greater metropolitan area. In the case of medium-sized and small cities, they are taken to represent (in addition to the household expenditures from municipalities that belong to their own region) the expenditure of other localities with similar characteristics including infra-structure level (communication and transportation), socioeconomic conditions and consumption habits.

To further ensure a broader depiction of prices, each of the 32 states in Mexico is represented by at least one city (about a third of them is represented more than once).[6] With this, it is assumed that the totality of urban localities in Mexico is represented through reported price quotations even if the greatest degree of geographic disaggregation of the price data is at the city-municipality-conglomerate level.

Evidently, the price data suffers from an urban bias, potentially limiting the welfare implications of the analysis. However, two facts justify the utility of the present study despite this limitation

[6] Ten out of thirty-two states are represented by more than one city, these are: Baja California Norte, Coahuila, Chihuahua, Guanajuato, Guerrero, Jalisco, Oaxaca, Sonora, Tamaulipas, and Veracruz.

in the price data. Firstly, Mexico's liberalization has been accompanied by rapid urbanization; the population share living in urban localities has steadily increased since the 1990's, reaching 62.5 % in 2010 (Mexico Census, 2010). Additionally, small rural localities are not anymore the only type of sending localities. Both patterns are likely to be sustained and even intensify in the years to come as Mexico continues with its natural process of development and the U.S economy continues with its de-industrialization. In light of this, the present study's focus on urban price effects can still be illustrative as a first approximation of the research question since it accounts for the potential impacts of emigration on the prices affecting the greater (and increasing) share of the population.

3.1.2 Price Variable Specificity and Data Trends

As previously noted, instead of considering price levels, this study analyzes categorical price indices defined in terms of object of expenditure. The approach, analogous to breaking the CPI into its eight expenditure-type sub-indices (which in turn consist of aggregated subsamples or groups of related products and services), will help to better identify the mechanisms through which emigration can affect prices as well as to derive welfare implications. Table 1 shows that during the period of analysis of the present study, prices indices rose in all of the eight product price index categories.

TABLE 1

Product Category	1995-2000	2005-2010	Inflation
	City Mean Price Index		
Other Services	36.96	87.07	*136%*
Education & Entertainment	37.45	88.02	*135%*
Health & Personal Care	40.64	87.77	*116%*
Food, Beverages & Tobacco	39.89	83.49	*109%*
Transportation	41.41	85.23	*106%*
Housing	44.39	90.68	*104%*
Clothing, Shoes & Accessories	51.16	92.64	*81%*
Domestic Furniture, Appliances & Utensils	54.91	89.46	*63%*
Average	43.35	88.04	*103%*

Source: Own calculations based on CPI data from Central Bank of Mexico and INEGI

Service-intensive categories such as education, entertainment, health & personal care and other professional services experienced the greatest inflation. Product categories involving a larger share of low-skill manufacture or industry-related labor (assembly-type work) such as clothing, and furniture & domestic appliances experienced the least price growth while intermediate category types saw their prices increase a little over the average across categories.

Table A-1 in the Appendix provides rankings of the ten top cities experiencing the largest increase in prices between the two quinquennia for each product price category. There it is shown that all the categories' rankings except for Clothing, Shoes and Accessories contained at least one city located in one of the historic migrant sending states. For the Health & Personal Category (the category with the most cities stemming from the traditional sending states) 40% of the top cities for which this price index rose the most came from the historic emigration region. Additional summary price statistics for each five year period are included in Table A-2 in the Appendix.

Lastly, it is important to note that the title classifications of the CPI's categorical broad sub-indices outlined by the INEGI and Banco de Mexico can be misleading. Each broad categorical price index is in turn composed of sections that group smaller generic aggregates of consumption items. These generic elements differ in terms of the number tradable vs. non-tradable goods they comprise and accordingly drive the tradable vs. non-tradable composition shares of the broad categories. For example, the Transportation product category, mostly composed of non-tradable concepts (public transportation service fares; repair, maintenance, insurance and care of automobiles) also pools prices of highly tradable items (autos, bicycles, motorcycles; tires, auto-stereo, gasoline and lubricants, etc.) Similarly, while Education & Leisure pools prices of all sorts of schooling services and of the broad touristic service industry, it also comprises prices of tradable items such as books, magazines, CD's, movies, videogames, etc. (See Appendix Table A-2.1 for description of non-tradable components)

3.2) Emigration Data

3.2.1 Data Sources

As explained earlier, this paper is to my knowledge, a forerunner in the examination of the effects that emigration could have on prices across different localities in Mexico, yet it still ascribes to the migration and development literature that tries to assess the different ways

through which Mexican emigration can boost the capabilities of migrants and the development of their sending communities. The common sources of emigration data used within this literature are:

a) *U.S-based sources* (U.S Census and the Current Population Survey (CPS))

Both of these are not suitable to this study primarily because they do not provide precise information on the geographical origin of migrants. Moreover, they suffer from undercount due to illegal migration[7] and are more useful in assessing permanent migration and the impacts of the Mexico-U.S migratory phenomenon in U.S destinations.[8]

b) *Mexico-U.S Collaborative projects* (Mexican Migration Project (MMP) and the Survey of Migration to the Northern Border (EMIF Norte))

These are the most detailed in terms of the socio-demographic characteristics of migrants and their migratory life experiences (including migrant attitudes, preferences, perceptions, and history); as such they are the most useful to study network effects[9] and, in the case of the EMIF, the additional effects of intensified border control and deportations. Despite their depth, neither of them is nationally representative, hindering their ability to help estimate the cross-regional effects of differential emigration rates on prices. For example, each year the MMP surveys only a small number of rural Mexican communities with high, mostly recurrent, rates of migration confined to the traditional Mexican Southwest sending region. The EMIF-Norte has an even smaller geographic coverage, surveying 12 midsized-to-large border cities contained along the 6 Mexican northern-border states.

c) *Mexican-based sources* (Mexican Census, the National Survey of Demographic Dynamics (ENADID), and the National Survey of Occupation and Employment (ENOE))

The Mexican-based data sources are the most appropriate to address the research question of this paper since they are nationally representative and provide cross-community indicators and other geographic information that allows to link migrants to their locality of origin.

[7] Mishra (2007) and McKenzie & Rapoport (2010) and others acknowledge this undercount

[8] For example, the CPS's design aims at measuring people whose principal residence is the U.S, thus much more useful to measure permanent migration and resettlement issues.

[9] See Munshi (2003) for details

Despite the above, this paper uses data from the 2000 and 2010 Mexico-U.S International Migratory Intensity Project datasets constructed by the Mexican National Council on Population (CONAPO). These are based, in turn, on the 10% microsamples of the respective Mexican Census of Population and Housing. The CONAPO datasets are nationally representative, and contain municipality-level, quinquennial data figures for each of the four main indicators of the Mexico-U.S migratory phenomenon, namely: the percentage of households in each locality with at least one member whom within the five-year period prior to the 2000 and 2010 census dates had: 1) received remittance income; 2) emigrated to the U.S (and had not return to Mexico by the time of the census); 3) been a circular migrant (within the same five-year time-span had both emigrated to U.S and gone back to live or reside in Mexico); 4) been a return migrant (Mexican born who resided in the U.S any year prior to or in the first year of each of the two quinquennial periods but had returned to resettle in Mexico within the 5-year period prior to each respective census date).

CONAPO's data is comparable to the information found in the ENADID and the ENOE. [10] Yet, much of its utility resides in that in contrast to other data projects, it compiles in a single dataset indicators that are normally scattered across bases or considered only independently. Hence, it allows for the comprehensive study of the main four dimensions of the migratory occurrence at distinct and narrow levels of geographical disaggregation (state and municipality).

3.2.2 Emigration Trends during Period of Study

In the present study, I specifically consider how the changes in emigration across the two quinquennial periods, 1995-2000 and 2005-2010, affected local prices in Mexico. Throughout the period there was both continuity and change with respect to the patterns mentioned in section 2. Continuity is found in the intensified diversification of migrant occupations, the stronger presence of migrants stemming from urban sending localities, the sustained expansion of the geographical range of sending communities to comprise the totality of the 32 Mexican states, and the shift towards permanent migration,

[10] The ENADID has been used by notable authors in the Migration Literature such as McKenzie & Rapoport. Yet, the high degree of comparability between CONAPO's data and the ENADID, united with the convenient and encompassing depiction of all the dimensions of the Mexico-U.S migratory phenomenon in CONAPO's data has led me to prefer it.

Change is primarily found in the volumes of flows. Table 2 below uses CONAPO's data at distinct levels of aggregation (at the national, state, and municipality levels) to describe how the four main indicators underlying the complexity of the Mexico-U.S migratory phenomenon changed during the period. Year 2000 refers to the 1995-to-2000 quinquennia while 2010 denotes the years 2005-to -2010.

TABLE 2

	Quinquennial Period Changes in Emigration Variables				
	% Households with Emigrants	% Households with Remittance Receipts	% Households with Circular Migrants	%Households with Return Migrants	
National Total					
2000	3.95	4.47	0.97	0.87	
2010	1.94	3.63	0.92	2.19	
	-2.01	-0.84	-0.05	1.32	*Percentage Point Difference*
	-0.51	**-0.19**	**-0.05**	**1.52**	*Decrease/Increase*
State Average					
2000	4.19	4.93	1.08	1	
2010	2.02	4.06	1	2.46	
	-2.17	-0.87	-0.08	1.46	*Difference*
	-0.52	**-0.18**	**-0.07**	**1.46**	*Decrease/Increase*
Municipality Average					
2000	6.04	6.65	1.24	1.19	
2010	3.81	6.5	1.2	3.45	
	-2.23	-0.15	-0.04	2.26	*Difference*
	-0.37	**-0.02**	**-0.03**	**1.90**	*Decrease/Increase*

Source: Based on CONAPO 2010 International Migratory Intensity Report

From the table we can observe that all measures of migratory intensity except for the percentage of households with a return migrant declined between the two five year periods. Indeed, the percentage of Mexican households with a migrant returning from the U.S within the five-year period prior to the census date increased by 1.32 percentage points, with the 2005-2010 period's return flow to Mexico roughly doubling that of the five-year period a decade earlier. Furthermore, at all levels of geographic aggregation the biggest decline is found in the percentage of households that sent a migrant to the U.S within the five-years prior to each census (the national average declined by approximately .51 percentage points between the two periods). The proportion of households receiving remittances also fell, with the national share of recipient households falling .84 percentage points between the two quinquenniums. Finally, Table 2 shows

that the state level average trends in the indicators for emigration, return migration, and remittance receipts closely resemble those observed at the national level. On the other hand, municipality level changes are less pronounced in terms of decline in emigration and remittance receipts but more marked in terms of return migration.

Naturally, the observed decline in emigration and overall debilitation of the migratory phenomenon between the two quinquennia has been influenced by a number of push and pull factors, some of which are outlined below.

Broad Economic Conditions

From an economic growth perspective, the Mexican economy has only been able to achieve moderate rises in per capita GDP whose average within the five year period of 2005-2010 was only 14% higher than the one between 1995 and 2000. Additionally, since the 1990's, the Mexican economy has been adversely hit twice; firstly via a major domestic macroeconomic crisis (Tequila Crisis) and recently through the spillovers of the 2006 U.S Housing Bubble Burst and the related 2008 Financial crisis. Indeed, Mexico still suffers from the lingering effects of its late 1994 crisis. To illustrate, due to the Tequila Crisis, in 2006 the mean household income was still slightly lower than in 1994; it then dropped by 14% from 2006 to 2010 in response to the spillover effects of the adverse shocks to the U.S economy. However, these macroeconomic factors can only explain part of the migratory patterns within the 1995-2010 period. In fact, while the average income per capita in Mexico was more severely hit by the mid-1990's Tequila Crisis than by the recent U.S. downturn, emigration rates were higher in the 1995-2000 year period than in the 2005-2010 quinquennia. Necessarily, additional forces have to be considered.

Mexican Demographic Transition

Some researchers in Mexico have identified the rise in the median age of the population (from 17 in 1970 to 26 in 2010) as a potential contributor to the decline in emigration. The rising median age in Mexico, a direct corollary of the substantial drop in the Mexican fertility rate starting in the 1970's, and more precisely of the country's demographic transition, has resulted in declining shares of its 15-to-39-year old population which is precisely the population in the peak years for emigration. While in 1990 the 15- to 39-years of age cohort made up about 73% of Mexico's working age population, they only represented 65% of it in 2010. (Pew Hispanic Center, 2012) In short, this explanation suggest that as Mexico has gone through its demographic transition the

reduction in the relative share of the age group more prone to migrate has inevitably led to a ceteris paribus decline in the absolute numbers of emigrants.

Increased Border Surveillance

As explained in section 2.1, since the end of the Bracero Program the dominant type of migration to the U.S has been illegal immigration. Hence, changes in the volumes of Mexican inflows to the U.S directly reflect changes in the number of illegal migrants. Under the standard neoclassical framework, the decision to migrate consists of a cost-benefit analysis through which an individual decides to migrate as long as the higher earnings abroad more than offset the costs of migrating. It is clear that the recent negative economic climate in the U.S has decreased the employment prospects and earnings of prospective migrants. However, the stepped-up border patrol surveillance and reinforced deportation measures adopted by U.S officials since the early 2000's have driven-up the costs to migrate. Since illegal migrants are more likely to come from the bottom of the skill and/ or income distribution in Mexico, they are highly sensitive to even moderate increases in the cost (and risks) to migrate. Thus, part of the drop in emigration could be attributed to the intensification of anti-illegal immigration measures in the U.S.

3.2.3 Variable's Specificity

For the empirical analysis, I only use two out of the four indicators provided by CONAPO. The nature of the research question lead me to abstract from considerations of the effects of circular migration. The following reasons outline why:

- Non-circular emigration is the prevalent type of emigration flow to the U.S in the urban agglomerations that constitute the core geographical unit.
- Circular migration flows are likely to cause only seasonal fluctuations in prices, yet the price data considered in this paper is much more likely to respond to more persistent changes in the demand and supply of goods.
- Circular and temporary Mexican migrants are primarily employed in the farming sector of both the U.S and Mexico and thus they overwhelmingly come from very small rural localities[11] which are not considered in the construction of the product price indices estimated by the Central Bank of Mexico and the INEGI.

[11] Rural localities are defined as those having fewer or equal to 15000 inhabitants.

- Non-circular migrant cohorts have a greater potential to become longer-term migrants and in turn help strengthen migrant networks which fuel remittance transfers and further emigration, reinforcing with this the potential demand-side price effects of emigration.

I also abstract from considering the effects of return migration because the focal point of the study is to determine the impact of the Mexican exodus on local prices.

Therefore, for the main explanatory variable of the empirical specification I exclusively use data from CONAPO's emigration indicator, namely: the share of households in each municipality characterized by having at least one member who emigrated to the U.S any time within each of the two five-year periods, and who had not come back to Mexico by the time of the 2000 and 2010 census dates. In order to conduct the robustness analysis, I also used CONAPO's remittance indicator as an additional control to test the potential mechanisms through which emigration affects prices.

To conduct the empirical analysis, I restricted the sample of the emigration data to include only those municipalities which were also part of one of the CPI's 45 city-municipality-conglomerates. I then aggregated these municipality-level shares of total households sending a migrant to the U.S according to the CPI's lists of conglomerates in order to derive city-level emigration rates.

As Table 3 below shows, during both quinquennial periods, the municipalities included in the city-conglomerate sample of the study (second row of table below) drove the greater part of the period's overall municipal average shares of households in Mexico sending a migrant. Indeed, among the municipalities that were excluded from the analysis (see out-of-sample row in Table 2) the average share of households with emigrants did not change much between the two quinquennia (the period's average share increase by .03 percentage points). Additionally, the average proportion of households with emigrants of the city-municipality-conglomerates (sample municipalities) is very close to the aggregated state level average, providing proof that our sample of cities indeed captures much of the cross-state variability.

Finally, while the average share computed at the city-conglomerate level is lower than the one using all municipalities in Mexico, it is still higher than aggregating at the national level, thus

allowing us to think of the information presented in this study as an intermediate departure point for the analysis of the price-emigration link.

TABLE 3

Average Share of Households with Emigrants during Quinquennial Period
(percentage of total households per level of geographic disaggregation)

Aggregation Level	*Period 1995-2000*	*Period 2005-2010*	*Change*
All Municipalities In Mexico[a]	6.08	3.81	-2.27
Sample Municipalities[b]	***4.25***	***1.95***	***-2.29***
Out-of-Sample Municipalities[c]	1.83	1.86	0.03
State average	***4.32***	***1.96***	***-2.35***
National Average	3.95	1.94	-2.01

a. Totality of Mexican Municipalities
b. Only the municipalities contained in the city-conglomerate definitions (≥15 000)
c. Municipalities with population size ≤14 9999 inhabitants (a-b)

Source: Own calculations based on CONAPO's data

SECTION 4:
Conceptual Framework: Mechanisms

Several mechanisms underlie the relationship between emigration and prices rendering the overall effect priori uncertain. The unclear and sometimes self-cancelling nature of these channels ultimately makes the link between emigration and prices an empirical question.

Standard economic theory principles teach that as long as supply does not adjust instantly to demand, a good's price will be directly proportional to the quantities demanded by consumers and inversely proportional to the relative abundance of the factor most intensively used in its production. Thus, in studying the effect of Mexican emigration on prices, we must depart from considering both demand and supply side causations.

4.1) Labor Supply Channel

A first effect of emigration is that it directly alters the labor endowment of sending localities, potentially inducing changes in relative factor prices. Intuitively, by reducing the supply of working age individuals, emigration can increase wages in a sending locality; additionally, by

modifying the composition of the local workforce it could also generate uneven wage effects and potentially expand wage inequalities in Mexico. In the standard neoclassical world of diminishing returns, a ceteris paribus increase in emigration would increase the marginal productivity of non-emigrant workers by decreasing the relative abundance of labor[12]. With perfectly competitive product markets, labor would be paid the value of its marginal product; wages would rise and assuming non-sticky prices, goods prices would directly reflect the wage increase.

This production-cost wage effect likely varies across product types depending on their specific skill intensity and the prevalent pattern of migrant self-selection, that is, whether those emigrating are relatively more skilled (positive selection) or less skilled as compared to the non-migrant Mexican labor force (negative selection). Using a skill-cell approach Mishra (2004) tested the link between emigration and wages in Mexico and empirically showed that greater emigration increased national wages for all worker types across the education-experience spectrum, with the greatest increase concentrating on individuals with 12-15 years of schooling (the group showing the largest emigration prevalence).

An interesting area of further research would be to test this labor endowment mechanism adopting a geographical perspective. From a regional standpoint, after controlling for product type and assuming ceteris paribus emigration changes, goods and services whose production most actively uses migrants' labor would be expected to be relatively more expensive in localities with higher emigration.

The data presented in this paper does not provide any information on the occupational or skill profile of emigrants making it hard to directly estimate the effect that changes in the proportion of households with emigrants has on the production costs of localized goods and services. Nonetheless, we can hypothesize that through the labor-supply mechanism, the observed

[12] The standard neoclassical framework would further assume no change in the local capital endowment. However, such simplifying assumption seems unrealistic in the context of the current paper, especially for the first period (1995-2000) given the capital influx that followed the late 1980's liberalization policies and the increased FDI after the signing of NAFTA in 1994. For the second quinquennia (2005-2010) the assumption seems less risky but it still misses the point.

The crucial mechanism is that the emigration induced decrease in the labor stock should surpass any evolution in the capital stock so that the resulting higher capital-to-labor ratio translates into higher marginal productivities and wages of staying workers.

reduction in the share of households sending a migrant across the two quinquennial periods would imply that production costs of the goods and services more intensively employing the labor provided by the typical migrant would be relatively lower in the 2005-2010 time span (when emigration flows decreased and return migration rose) than in the 1995-2000 period[13]. As emigration decreased across all regions in Mexico, this channel suggests downward pressure on prices, especially in those product categories intensively using the skills of the typical emigrant, in localities experiencing the greatest emigration decline.

4.2) Demand-side Channels

Emigration, can affect the demand of goods and services through two main mechanisms.

Firstly, an increase in emigration directly decreases the effective number of consumers per locality, thus affecting prices through a ceteris paribus change in the volume of consumers. Secondly, emigration can alter the prevailing pattern of preferences in the sending locality both via selectivity into migration and by affecting the demographic composition of the consumption base. The most recent Mexican census (2010) asserted that emigration changes the structure and configuration of households (the share of female headed households in states with higher migratory intensity was more than ten percentage points higher than that of states less exposed to emigration). In addition to affecting female-to-male ratios, an increase in emigration can raise dependency ratios by altering the number of working age individuals in a sending city. In regards to migrant selectivity, authors McKenzie and Rapopport have argued that there is intermediate-to-negative self-selection into migration, with negative selectivity becoming more likely as Mexican migrant networks grow between the two countries. Both of these emigration-induced changes in the local configuration of the population imply that the effect of emigration on price indices is likely to be unevenly distributed across product categories and vary according to which types of products and services are relatively more consumed by the average household sending a

[13] The same logic outlined above applies: due to a lower share of households sending a migrant to the U.S and an increased share of households receiving back a member that previously resided in the U.S, we expect a ceteris paribus larger local labor endowment in the 2005-2010 period than in 1995-2000. Assuming (for simplicity) no change in the local capital endowment, the resulting enhanced relative abundance of labor, especially in industries more likely to employ the specific skills of would-be or ex-migrants, would imply lower marginal productivities of labor due to diminishing returns to factors of production. Under perfect competition, this would translate to lower wages and thus lower prices.

member within each quinquennia and by the dominant socio-demographic profiles of the staying population.

To the extent to which endogeneity in the migration decision[14] and the resulting pattern of migrant self-selection also imply differences in consumer's sensitivity to prices and in the search costs of those staying and those emigrating, we would expect to see differential price index effects as well. Price dispersion of goods and services is inversely proportional to their average prices and a direct function of agents' search costs, themselves a reflection of the opportunity cost of time. Indeed, the literature exploring the link between immigration and prices in destination countries stresses the importance of differing search costs between migrant and non-migrant populations. In his study on immigration and international prices, Zachariadis (2012) proposes immigrants' lower time-opportunity costs and related higher search efforts, as a potential explanation for immigration-induced downward pressures on the prices of products predominantly consumed by immigrants.

Intuitively, the lowest opportunity cost of time is for individuals at the bottom of the Mexican schooling distribution; if the pattern of self-selection was such that these were the individuals more likely to emigrate, the prices of their preferred goods and services could potentially fall as decreasing emigration would intensify consumer search for best prices.

The empirical specification of the current analysis is not designed to directly assess the relationship between differential search costs and emigration; however in the spirit of guiding further research, it is worth noting this mechanism in order to point to all potential links between emigration and prices. In the context of Mexican emigration, assuming migrants are more likely to stem from the upper-low to medium of the skill and income distribution (as McKenzie and Rapopport), we would not expect to find big price dispersion effects resulting from emigration-related changes in consumer's search costs . In theory, the effect of emigration on search efforts and thus on price dispersion can be geographically determined as well. Search costs (in terms of opportunity cost of time) are likely to be higher across all schooling types in cities with better job-market opportunities. However, in this context it would be difficult to disentangle the

[14] Whether a set of unobservable characteristics both determine migrant's motivation to emigrate and their success outcomes.

effect due to the engodeneity of emigration (better job prospects could both increase the opportunity cost of search and decrease emigration).

A related demand-side mechanism is the important role of remittances. This channel is further decomposed into income and substitution effects. Remittance flows, while unreliable, free-up resources and significantly help relax household financial constraints, thus increasing aggregate demand for normal goods and services. As long as greater emigration is associated with larger remittance receipts, the income effect of remittances would imply an increase in the price indices across all product categories. Multiple studies have shown that the vast majority of remittance income in Mexico has historically been used to cover basic needs such as food, shelter and health. However, other consumption bundles become affordable as recipient households move beyond a threshold income level. Hence, remittances can induce important substitution effects across consumption categories. In the case of more well-off remittance recipients, this could imply a shift in preferences away from necessities towards more leisure, entertainment and other conspicuous consumption type of expenditures such as household furnishings and appliances, and more sophisticated electronics.

Differential patterns of consumption related to the endogeneity of remittance receipts (households receiving relatively larger or more stable flows are likely to be those sending the most able migrants, biasing average local preferences in favor of the demands of these relatively better-off households) and migrant selectivity (with recipient and non-recipient households differing in terms of price elasticities and individual search costs) suggest that remittances can also produce asymmetric price effects across product categories.

Although not the focal point in this paper, consideration of the aforementioned remittance effects helps to shed light on the multiple mechanisms underlying the emigration-price link. Thus, the empirical specification used in this paper, controls for the share of households receiving remittances per city within each five-year period.

A final crucial consideration is that not only is the effect of emigration on different products' prices multi-sourced, but the relative strength of each of the potential channels on the overall effect crucially depends on whether the goods in question are mainly tradable or non-tradable. Therefore, in the empirical analysis detailed in the following sections I will also estimate the

impact of cities' emigration on the price indices of the primarily non-tradable items within each index category. By definition, non-tradable goods and service prices are exclusively determined by local demand and supply conditions. Thus, any empirical result on the price of non-tradables should be interpreted as the direct effect of emigration on product prices, either via supply or demand side channels. In contrast, the traditional neoclassical framework contents that in a perfectly competitive open economy, prices of goods traded at the national level are not driven by local labor supply conditions. Theory suggests that even if regional patterns of emigration were to affect the labor supply composition of specific localities, thus altering local production costs, trade would nonetheless dilute the local labor supply mechanism and spread price effects nationally (Frattini, 2008). Therefore, theoretically, while non-tradable goods prices should capture both mechanisms, we would expect tradable good's prices to primarily reflect demand-side mechanisms.

SECTION 5
Empirical Framework

5.1) Baseline Specification

I exploit the variation in the share of households with an emigrant member across cities in Mexico and over time to estimate the potential impact of emigration on local categorical price indices. The basic specification of the empirical model (per product category) is the following:

$$\ln P_{it} = \beta \ln\left(\frac{Hhds^{e}_{it}}{Total\ Hhds_{it}}\right) + \varphi_i + \gamma_t + \varepsilon_{it} \qquad [1]$$

Where *t* refers to each of the two quinquennia (1995-2000 & 2005-2010) and *i= 1, 2, 3,...,45* denotes the 45 Mexican urban agglomerations for which price data is available (the city-municipality conglomerates explained in the data section). As sketched in the previous section, we cannot expect the impact of emigration to be equal across all goods and services. Emigration's effects on production costs vary across industries and are necessarily linked to the occupational profile of the migrants in their origin location. Further, given the natural heterogeneity of preferences across the population, the non-random distribution of remittance

receipts across households, and the restructuring of local consumption patterns due to migrant selectivity, all of the demand-side mechanisms imply an uneven spread of emigration's impact among the eight different categories of spending. Therefore, using the baseline specification in [1], I run a separate regression for each of the eight broad product categories that ultimately compose the CPI reported by INEGI and the Bank of Mexico.

In each regression, the dependent variable $ln\,P_{it}$ is the log five-year-average price index of the corresponding broad category in city *i* and quinquennium *t*. The parameter of interest, β, captures the effect of the main explanatory variable, the emigration variable ($\ln(Hhds^{e}{}_{it}/Total\,Hhds_{it})$ defined in the current paper as the log of the proportion of households in city *i* sending a migrant to the U.S within the five-year period *t* prior to the census date. The causal effect of the emigration variable on prices is subject to multiple omitted variable biases. I introduce city dummies φ_i to control for city-specific, time-invariant characteristics that underlie permanent cross-city differences in prices. Examples of these city-bounded traits include factors that affect the extent of trade such as climate, natural resource endowment, and geographic location; as well as time-persistent factors (characteristics that remained roughly stable throughout the 1995-2010 year period) underlying broad structural conditions of development such as lingering patterns of economic specialization, political heritage, and socio-demographic characteristics such as relative proportion of population with indigenous roots. I also include the time dummy γ_t that controls for period specific effects like changes in product specifications (common across cities and stores) of the items comprising the price indices (this helps account for changes in prices due to changes in quality). The last term,ε_{it}, is the idiosyncratic error.

5.2) Empirical Challenge: Endogenous Emigration

However, the specification found in [1] is not enough to address the main empirical challenge: the fact that households' decision to send a migrant to the U.S is intrinsically endogenous. In fact, the emigration variable, is subject to the three main causes of endogeneity. Below I describe each of them while in sub-section 5.3 I explain how I address the issue.

Omitted Variable Endogeneity

The endogeneity of the emigration variable implies that the emigration decision is necessarily linked to local (observable and unobservable) conditions that simultaneously affect prices.

Hence, city-level differences in emigration rates are not arbitrary; omitted factors can concomitantly affect city-price indices and emigration rates, therefore biasing the simple OLS estimates. Negative economic conditions (scant job prospects, unemployment, low wages, inequality of opportunity and limited social mobility), sluggish growth factors (bad institutions including no rule of law, corruption and collusion of officials; outdated infrastructure; insufficient investment), crime and city specific adverse shocks are all likely to enhance emigration rates while putting downward pressure on price indices. The city-dummy linear fixed effects in baseline equation [1] only partially address the endogeneity problem as they can only correct for time-constant omitted variables. Moreover, even if using linear fixed effects can help to better isolate emigration's true impact, it is unlikely that the aforementioned circumstances and other unobservable factors are time-invariant or remain unchanged throughout the two quinquennia (and in the period within). The inability to properly control for all potential dynamic economic conditions and other unobservable elements prone to concurrently affect both household members' emigration and city-price indices makes it necessary to adopt a stronger empirical strategy to get rid of omitted variable bias endogeneity.

Reverse Causality Endogeneity

Another important potential source of endogeneity arises from feedback effects of price indices on emigration: households' motivation to send a migrant could be bigger in cities with higher than average categorical price indices. Indeed, under backward looking expectations, household members in cities with a historic tendency to experience higher than average inflation could view emigration as an insurance mechanism against future expected growth in price indices and other cost-of-living considerations (of course that households ignore or are uncertain about the potential effects of emigration on prices). Therefore, the estimated effect of emigration on prices could in fact be capturing the impact of product price indices on emigration.[15]

[15] Assuming the labor-supply channel dominates, more emigration would be associated with higher price indices (positive effect) due to greater production costs. In this case reverse causality endogeneity would cause an overestimation of the positive OLS estimates. If we assume that a reduction in aggregate demand due to increased emigration is the chief mechanism, then we would expect a negative association between emigration and prices and reverse causality endogeneity would potentially underestimate emigration's negative effect on prices.

Measurement Error Endogeneity

As was described in section 3, the data contained in the main explanatory variable is essentially the average proportion of households sending a migrant across the specific municipalities comprising each of the 45 city-municipality-conglomerates (denoted by the sub-index *i*) for which price data was available. Because this variable only captures a restricted sample of the total number of households in Mexico that decided to send a migrant within each five year period, it suffers from measurement error bias due to small sample size. In what follows I will assume that this measurement error is uncorrelated with the unobserved explanatory variable,that is that the classical errors-in-variables assumption (CEV) holds. Thus, I expect attenuated OLS estimates.

5.3) Solution: Instrumental Variable Approach

5.3.1 Instrument's Construction

In order to overcome the empirical challenge posed by these three important sources of endogeneity, I adopt the two-stage least squares (2SLS) estimation approach with an instrumental variable based on historical state-level patterns of emigration. The instrument is grounded on two strands of the literature and is formally defined as:

$$\left(\frac{Emigrants_{j1955}}{Total\ Mexican\ Migrants_{1955}}\right)\ x\ \sum_j Households^e_{jt} \qquad [2]$$

The first term, refers to Woodruff & Zenteno's 1955-1959 historic state-level migration rates where *j = 1, 2,…,32* codes for each one of the Mexican states This term is motivated by numerous studies in the Mexico-U.S migration literature that use Woodruff & Zenteno's historic state-level migration rates to instrument for current emigration stocks.[16] Most of these studies do not use a panel data structure and focus on cross-community effects of emigration. Thus, in isolation, this first term would not be enough to control for the time dimension of the endogenous explanatory variable $(\ln(Hhds^e_{it}/Total\ Hhds_{it}))$. Therefore, relying on the literature on immigration and prices (Cortes (2008), Frattini (2008)), I introduce the second term (total number of households in Mexico sending a migrant to the U.S in each of the two more recent

[16] See among others: Hanson & Woodruff (2003), Lopez-Cordoba (2005), Chiquiar & Hanson (2005), Hanson (2003, 2007), Hildebrandt & McKenzie (2005), McKenzie & Rapopport (2007, 2010)

quinquennia) in order to account for the longitudinal dimension of the endogenous emigration variable we need to instrument.

The instrument employed in this paper crucially exploits the concept of migrant networks, through which the deep historical roots of the migratory phenomenon in Mexico (outlined in section 2) have been self-sustained.

As part of the adaptive process to the U.S, pioneer migrants developed the necessary social capital (through trust, empathy, kinship, etc.) to establish robust migrant networks that would allow them to better deal with information asymmetries (due to language, culture, and educational barriers) and other imperfections in the U.S labor market (high job turnover and seasonality). Moreover, the strong *paisanaje sentiment* (altruistic and reciprocal motivation to aid or collaborate with fellow members from same sending community) characteristic of Mexican migrants localized the scope of each of the multiple migrant networks and enabled them to facilitate migration for later cohorts from their respective region of origin by reducing the risk to and the costs of migrating. Consequently, Mexican migrant networks have self-fed the migratory phenomenon and perpetuated its geographical distribution.

The study's use of the historic emigration patterns prevalent during the height of the Bracero Era (1950's) allows for the consideration of more solid network effects than those of earlier earlier emigration periods. This is primarily because the 1950's migrant networks were much more developed than those of prior decades in terms of geographic breadth, migrants experience with destinations' challenges, and depth of the facilities provided to their members and to Mexican sending communities.

5.3.2 Instrument's Validity

Ultimately, the instrument's goal is to provide a period-varying measure of different state-emigration-outflows that is independent from local contemporaneous economic (and other) factors. To justify the instrument's usefulness at isolating the true causal effect of the emigration rate on city price indices it must fulfill the relevance condition and the exclusion restriction.

*Relevance: Instrument's Streng*th

The well-documented[17] persistence of the historical pattern of international migration in Mexico ensures its correlation with more recent patterns; this is clearly shown in Table 4 where we see

[17] See Massey, Goldring and Durand (1994, p 1496) and studies mentioned in prior footnote.

that more than 50 % of the cities with the largest share of households with a migrant member within each five-year period are located in the historic emigration epicenters

TABLE 4

Top Cities by Share of Households with a Member Emigrating During Quinquennial Period

City	1995-2000	Historic Region	City	2005-2010	Historic Region
Aguascalientes	12.94%	**Yes**	*Aguascalientes*	5.93%	**Yes**
Cortazar	11.24%	**Yes**	*Cortazar*	5.75%	**Yes**
Leon	11.09%	**Yes**	*Jacona*	5.06%	**Yes**
Jacona	11.01%	**Yes**	*Leon*	4.49%	**Yes**
Tepatitlan	10.99%	**Yes**	*Tepatitlan*	4.36%	**Yes**
Fresnillo	7.83%	**Yes**	*Puebla*	3.04%	No
Colima	7.43%	**Yes**	*Iguala*	2.73%	No
Iguala	7.36%	No	*Fresnillo*	2.68%	**Yes**
Cuernavaca	6.64%	No	*Cuernavaca*	2.66%	No
Queretaro	6.29%	No	*Tulancingo*	2.63%	No

Cities Experiencing Greatest Decline in Emigration

City	Period Decline	Historic Region
Culiacan	-0.72	No
Colima	-0.70	**Yes**
Monterrey	-0.69	No
Torreon	-0.68	No
Guadalajara	-0.68	**Yes**
San Luis Potosi	-0.67	**Yes**
Fresnillo	-0.66	**Yes**
Veracruz	-0.65	No
Iguala	-0.63	No
Tampico	-0.63	No

Source: Mexico-U.S International Migratory Intensity Project, CONAPO

.With this, a household from a city with high levels of early 20th century emigration will be more likely to have a household member emigrating to the U.S within each of the two recent quinquennia than an otherwise identical household living in a city with less historic exposure to migration.

While in this study I mainly use historic emigration rates from the 1955-1959 year period to construct the instrument; authors Woodruff & Zenteno provide two main sets of historic rates: one from 1924 and the other from 1955-59 (both of which have been widely used in the literature). The former rates were inspired by Foerster (1925) who reported the U.S. immigration

rate for the state in which Mexican households sending migrants to the United States in 1924 were located. [18] The 1955-59 rates reflect emigration patterns from the peak of the Bracero Program and were obtained by combining census data on Mexican state populations with annual U.S. immigration data on the Mexican state-of-origin of temporary legal workers admitted under the Program. These rates thus give the per state-of-origin migrant shares of the total inflow of Mexicans to the U.S during the years 1955-1959. The First Stage results in Table 5 show that the instrument constructed using the Bracero Era rates is a significant predictor of the current share of households per city-municipality-conglomerate sending a migrant within each five year period prior to the respective census dates.

TABLE 5

	Dependent Variable: $\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$		
	(1)	(2)	(3)
Instrument: $(Emig_{j1955}/Total\ Mig_{\cdot 1955}) \times \sum_{j} Hhds^{e}_{jt}$	0.119***	0.116***	0.316*
	(1.25e-08)	(0.0204)	(0.155)
$Ln(period\ avg.\ state\ GDP\ per\ capita)$		0.0323	0.0413
		(0.216)	(0.233)
$Ln(share\ of\ Hhds.\ with\ remittance\ receipts)$			0.0588
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.384)
City Fixed Effects	*Yes*	*Yes*	*Yes*
Period Fixed Effects	*Yes*	*Yes*	*Yes*
Observations	90	90	90
R-squared	0.960	0.960	0.960
F-stat	9.0e+13	32.06	4.14

Standard errors clustered at state level are reported in parentheses

In conducting the analysis of emigration on prices I actually tested both sets of rates as the historic shares underlying the first term of the instrument ($Emigrants_{j1955}/Total\ Mexican\ Migrants_{1955}$). A number of factors led me to choose the 1955-59 rates over those of 1924. Firstly, by considering outflows over five consecutive years, the construction of the 1955-59 rates more closely resembles the data on the main endogenous explanatory variable used in this study.

[18] The 1924 rates give the per state-of-origin migrant shares of the overall, early 1920's, "Flood Tide" inflow of Mexican migrants (the first real massive wave of emigration after the broad late 19th century migratory patterns were drawn).

Secondly, the instrument based on the 1955-59 rates was more highly correlated to the recent quinquennia emigration shares than that using the 1924 rates (correlation coefficients were 0.55 and 0.33 respectively).

Most importantly, the comparison of the First Stage results using each of the rates (included in Table A-3 of the Appendix) shows that while the F-statistic for instrument weakness was larger than 10 for each of the rates when no other variables were considered, the strength of the instrument employing the 1924 rates considerably dropped with the inclusion of the robustness controls, to the point of becoming an insignificant predictor. On the other hand, First Stage results showed that the instrument based on the 1955-59 emigration rates continued to be a strong predictor of more recent city shares of households with migrants, even after controlling for linear fixed effects and the explanatory variables used for robustness checks including the log five-year average per capita state GDP and the log share of households per city with remittance receipts within each five-year period. Figure 3 in the appendix gives the First Stage regression lines as a graphical illustration of the 1955 instrument's higher predictive strength over that using the 1920's historic rates.

Exclusion Restriction: Instrument's Exogeneity

To guarantee the orthogonality of the instrument and therefore meet the exclusion restriction, we must make sure that the only channel through which the historic state emigration rates affect the recent five-year average city price indices is through their effect on the current proportion of households per city that send a migrant to the U.S in each quinquennia. As explained in section 2, the birth of the historical pattern of emigration dates back to the late 19th century when faced with industrialization's labor demands and restrictions to import Asian workers, U.S. contractors followed the railroads south into Mexico, hiring workers from west-central states. Hence, initial state migration rates to the U.S were directly linked to the railroad distribution and as such, they are subject to a couple of related threats to the exclusion restriction**:**

1. Inertia in the unobserved historic structural factors influencing the establishment trajectory of the railroad in Mexico. Continuity in the initial factors underlying first patterns of emigration (rails settling in some states over others) could still be driving differences in economic conditions affecting emigration and prices across Mexican states.

2. Development of the railroads in certain states and communities unleashed a series of factors affecting their process of industrialization and their commercial specialization.

3. Localities' diverse history of exposure to transnational migration ushered in different patterns of economic development & wellbeing affecting local price trends which in turn help determine current indices through a channel other than recent emigration.

The first two threats apply much less to the 1955-59 rates than to the 1924 rates partly because by the time the Bracero period reached its height in the 1950's, more states had been incorporated to the set of prime sending states regardless to their exposure to the rail lines. Indeed, as labor demand needs intensified in the U.S in the aftermath of the world war and as the first networks developed, the geographic patterns of emigration opened to push forces beyond spatial connectivity. Besides, to the extent that they are time persistent, city-fixed effects help to account for some of the historic structural factors mentioned in the first threat (geography and strategic location; climate and natural resources; cultural and socioeconomic heritage; political enclaves, etc.)

To reduce the third threat, and ensure orthogonality I would need to control for historic levels of development by using the 1950's or other past GDP per capita or GDP growth measures. In the absence of reliable and complete data on 1950's or other historic levels of state GDP per capita in Mexico and due to the high degree of autocorrelation in GDP time-series, I use the recent quinquennia log state GDP per capita averages to roughly approximate the relationship between historic emigration and historic development trends that defies the exclusion restriction. Following Hildrebrandt & McKenzie (2005), I test the independence between the instrument and the log recent period five-year average per capita state GDP's to verify that the instrument is not correlated to current per capita GDP (an omitted variable included in the error of the baseline specification- ε_{it} -) and thus determine whether the threat to the exclusion restriction is significant. Using the Spearman Rank correlation coefficient, the instrument based on the 1955-59 rates was found independent from log per capita GDP's (the coefficient was negative and insignificant: rho= -0.08; p= .446; thus not allowing us to reject the null of independence). This partially helps to validate the exclusion restriction in that it shows no significant relationship between the instrument and a contemporary measure that proxies for past economic development and trends. In short, there is some evidence suggesting that differing historical degrees of

exposure to emigration did not trigger development asymmetries significant enough to concurrently influence more recent emigration and current prices, thus helping to verify that the sole channel through which the instrument affects current prices is through its effects on the current proportion of households per city that decides to send a migrant. Nonetheless, in the section 7, I will include the log five-year average per capita state GDP's as an additional control to the baseline specification in order to further guarantee that the exclusion restriction holds and to ensure the robustness of the 2SLS results.

Finally, it is important to explain how the instrument helps in correcting for measurement error bias. Its second term $(\sum_j Households_{jt}^{e})$ is the sum of the number of households sending a migrant across all municipalities in all of the states (j) comprising Mexico. By considering the totality of households in Mexico sending a migrant, this term helps reduce the measurement error inherent in the emigration variable. It is also necessary to clarify that even as the endogenous explanatory emigration variable is defined at the city-level, the state-level of aggregation of the instrument does not pose an additional empirical challenge because U.S industrialists gathered workers from areas along the railroad's path where sizable populations could offer cheap surplus labor. These areas likely coincide with the current (per state) urban agglomerations specifically considered by the CPI price data. As Table 3 in the data section shows (subsection 3.2.3), the state and city-level estimations (sample municipalities' estimations) of the average share of households with a migrant in each quinquennium are almost the same, indicating that if historic state-level emigration rates can help predict current state-level emigration rates, they are also likely to help approximate recent city-level emigration patterns.

Given all the above, the instrument's design allows to use the historic 1950's geographic distribution of emigration to predict more recent outflows of migrants from each city that are impartial to the 1995-2000 and 2005-2010 period-push factors that concomitantly influence the evolution of prices.

SECTION 6
Results & Welfare Discussion

6.1) Baseline Results

As outlined in the data section, the eight broad product categories that make up the Mexican CPI are defined according to households' expenditure purposes and differ in the degree to which they mainly reflect prices of tradable vs. non-tradable consumption items. I start the analysis by estimating the baseline model presented in equation [1] of the section 5 on the eight complete product categories. Running a separate regression for each category can help to disentangle which of the mechanisms exposed in the conceptual framework of section 4 dominates the relationship between Mexican emigration and local city prices. To further clarify the nature of this relationship, and determine whether supply-side or demand-side causations prevail, I repeat the analysis using equation [1] but considering only the sections within each price index category that aggregate purely (or mostly) non-tradable generic concepts. To ensure causation rather than simple correlations, I performed standard OLS and 2SLS regressions where the chosen instrument for the latter follows formula [2] and gives the predicted per state outflow of Mexicans to the U.S in each quinquennia using the 1955-19559 geographic emigration patterns. Results are presented in Table 6: the first two columns correspond to the OLS and IV results of the baseline specification for complete product categories while the third and fourth columns present the estimates for the non-tradable components within each category.

The β_{OLS} estimates for the complete price index categories in the first column of Table 6 suggest a non-significant, non-homogeneous relationship between emigration and categorical product price indices. These naïve estimates are clouded by endogeneity and the direction of their bias is made clear by comparing them with the IV estimates in column two.

The $\beta_{IV's}$ were negative and significant at the 1% level across all price categories indicating that the city-level categorical price indices rise (fall) as the proportion of households sending a migrant to the U.S within each city-municipality-conglomerate during each five year period decreases (increases).

TABLE 6

β Coefficients for Main Explanatory Variable

Log of the proportion of households per city sending a migrant to the U.S within each quinquennium: $ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$

Price Category		Complete Category OLS (1)	Complete Category IV (2)	Non-tradable Components OLS (3)	Non-tradable Components IV (4)	Obs.
Food, Beverages & Tobacco		-0.0112	-1.016***	[a]0.0116	[a]-1.109***	
		(0.0213)	(0.0903)	(0.0557)	(0.104)	90
	R^2	0.998	0.817	0.986	0.799	
Clothing, Shoes & Accessories		-0.0326	-0.831***	-0.0705	-1.066***	
		(0.0748)	(0.0829)	(0.0926)	(0.109)	90
	R^2	0.956	0.790	0.959	0.802	
Housing		0.00619	-0.986***	0.00903	-0.641***	
		(0.0475)	(0.0973)	(0.0290)	(0.0614)	90
	R^2	0.991	0.805	0.992	0.803	
Domestic Furniture, Appliances & Utensils		0.0259	-0.677***	0.0810	-0.782***	
		(0.0649)	(0.0713)	(0.123)	(0.101)	90
	R^2	0.970	0.775	0.911	0.694	
Health & Personal Care		-0.00823	-1.063***	-0.0422	-1.193***	
		(0.0551)	(0.0949)	(0.0943)	(0.115)	90
	R^2	0.991	0.810	0.968	0.800	
Transportation		0.0494	-0.994***	-0.0447	-1.106***	
		(0.0318)	(0.0952)	(0.0568)	(0.101)	90
	R^2	0.996	0.793	0.987	0.819	
Education & Leisure		0.0470	-1.179***	0.0663	-1.313***	
		(0.0457)	(0.116)	(0.0481)	(0.132)	90
	R^2	0.992	0.794	0.991	0.788	
Other Services		0.0665	-1.187***	[b]0.0695	[b]-1.198***	
		(0.0608)	(0.117)	(0.0618)	(0.119)	90
	R^2	0.986	0.782	0.984	0.780	
				[c]0.0491	[c]-1.110***	
				(0.0973)	(0.116)	90
	R^2			0.967	0.771	
City Fixed Effects		Yes	Yes	Yes	Yes	
Period Fixed Effects		Yes	Yes	Yes	Yes	

All regressions include city and period fixed effects, these consist of city dummies and a year dummy corresponding to the 1995-2000 quinquennium. Standard errors clustered at state level are reported in parentheses:
* Significant at the 10 percent level (p<0.1) **Significant at the 5 percent level (p<0.05) ***Significant at the 1 percent level (p<0.01)

a) Output if for non-tradable food items such as locally pre-cooked meals including: roasted chicken, pizzas, barbecued pork, etc.

b) Regression output is for services pertaining to the Restaurant Industry, it differs from a) in that a)only considers locally pre-prepared items to take home, while b) includes the whole service (food and other services that form part of the eating-out experience)

c) Regression output is exclusively for administrative public and government processes (treasury and legal records, business permits, filing of taxes, documentation for passport, getting driver's license, etc.)

Because both the dependent variable and the main explanatory variable are given in log-form in the baseline specification, all β coefficients (OLS and IV) are to be interpreted as elasticities. Therefore, column 2 of Table 6 results suggest for example, that for the two categories most sensitive to emigration (higher magnitude β_{IV} coefficients), namely Education & Leisure and the Other Services category, a ceteris paribus 10% increase in the proportion of households per city sending a migrant to the U.S in each five-year period is approximately associated with an average 12% decrease in their respective price indices (drop in the index for Education & Leisure related goods was 11.79% while that of the price index for specialized services included in the Other Services category was 11.87%). Conversely, among the categories showing the least responsiveness to emigration, we see that a 10% increase in the emigration variable implies an average 8.3% decrease in the price index for Clothing, Shoes & Accessories and a 6.7% decrease in the of Domestic Furniture, Appliances and Utensils index.

Since all the IV coefficients were smaller than the OLS coefficients (even for the 3 categories in which $\beta_{OLS} < 0$, the $\beta_{IV's}$ were more negative, thus smaller) we can conclude that the OLS estimates suffer from an upward bias that causes us to underestimate the negative impact that increased emigration has on price indices (attested by the IV results).

The overall positive bias can be the result of unobservable factors simultaneously affecting price indices and emigration in the same (either positive or negative) direction. Negative economic conditions (or shocks) in the U.S, as those experienced through the 2006 subprime crisis, the 2008 recession or the early 2000's post dot-com-bubble economic slowdown, can act as un-observables that negatively affect Mexican households' decision to send a migrant while at the same time cause downward pressure on Mexican price indices as adverse U.S economic conditions spillover to the Mexican economy. [19]

[19] A more formal explanation of adverse U.S shocks as a potential source of bias is as follows:

OLS estimates for the (primarily) non-tradable components within each price category (β_{OLS}^{NT}) are non-significant and consistently larger in magnitude than the corresponding OLS estimates of the complete broad product classifications, except for the Transportation category. Similarly, just as in the case of the complete product categories, the IV estimates of the effects of emigration on the non-tradable components indices (β_{IV}^{NT}) are all negative and significant at the 1% level across the eight product classifications.[20]

Given the above, the sign of the bias is non-sensitive to the rough withdrawal from the eight main price classifications of the goods sections composed of highly tradable generic concepts. In other words, this suggests that the direction of the impact of un-observables concurrently influencing emigration and prices does not crucially depend on the tradable vs. non-tradable dichotomy.[21] This finding fits with taking adverse U.S shocks as omitted variables. As a U.S-

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Let *Emig* denote our endogenous emigration variable from the baseline specification and let $\theta_{US,t}$ denote the adverse unobserved shock . Our baseline equation would be:

$\ln(P_{it}) = \beta Emig_{it} + \varphi_i + \gamma_t + \varepsilon_{it}$

with the effects of the omitted U.S shock included in the error: $\varepsilon_{it} = \delta\theta_{US,t} + u_{it}$

Through the Ordinary Least Squares procedure, the estimator of the slope coefficient β_{OLS} would have a bias represented through:

$$plim(\beta_{OLS}) = \beta_{IV} + \delta \left[\frac{cov\,(Emig_{it}, \theta_{US,t})}{var(Emig_{it})}\right]$$

The second RHS term reflects the omitted variable bias; its direction is determined by δ and $cov\left(Emig_{it}, \theta_{US,t}\right)$.

a) The impact of an adverse U.S shock on the Mexican price indices is reflected through δ. We assume $(\delta < 0)$ as negative economic conditions in the U.S get transmitted to the Mexican economy through the increased integration among the two countries.

b) Scarce job prospects and lower potential earnings for immigrants following an adverse shock in the U.S diminish Mexican households' incentives to send a migrant. Overall adverse economic conditions in the U.S decrease the expected returns to migration, making emigration a less valuable investment for households.

Consequently, $cov\left(Emig_{it}, \theta_{US,t}\right) < 0$.

From a) and b) we see that the bias is positive, and because $\beta_{IV} < 0$ in all categories, it means that the bias leads to an underestimation of the true negative effects of emigration on price indices.

[20] It important to note that the results presented in Table 6 seem to suggest that measurement error is not the main source of bias. Even as the IV magnitudes of both columns 2 and 4 were higher than the OLS magnitudes of columns 1 and 3 ($|\beta_{OLS}|<|\beta_{IV}|$), the 2SLS estimation results implied a sign change in the majority of the product classification rather than an attenuation of the β's.

[21] The discussion of the bias for the specification including the non-tradable components is analogous to that found footnote 19:

$$plim(\beta_{OLS}^{NT}) = (\beta_{IV}^{NT}) + \delta^{NT} \left[\frac{cov\,(Emig_{it}, \theta_{US,t})}{var(Emig_{it})}\right]$$

based recession spreads into Mexico, it is expected to negatively affect all sectors of the economy; however, it is likely that the magnitude of the bias varies among tradable and non-tradable industries.

To approximate the magnitude of the bias, I calculated the absolute value difference between the OLS and IV estimates for both, the full categorical indices, and for the non-tradable components indices. Using this difference, I then ranked the price index classifications in descending order. Among the complete categorical price indices, the estimates difference ($|\beta_{OLS} - \beta_{IV}|$) was larger for the service-intensive and predominantly non-tradable categories such as Other Services, Education & Leisure and Health & Personal Care. Furthermore, $|\beta_{OLS} - \beta_{IV}|$ was the smallest for categories mostly comprised of tradable goods such as Domestic Furniture, Appliances & Utensils and Clothing, Shoes & Accessories. Analogous results were found when the analysis was mainly restricted to the non-tradable components of each index category. Further, the magnitude of the difference between OLS and IV estimates was higher when focusing solely on the non-tradable components within each classification ($|\beta_{OLS}^{NT} - \beta_{IV}^{NT}| > |\beta_{OLS} - \beta_{IV}|$ across all product categories).

All these results seem to suggest that in our sample non-tradable products suffer from a larger bias than tradable goods. A couple of explanations can help elucidate these somewhat counterintuitive finding. Assuming an exogenous adverse shock such as the Lehman brothers collapse (and the resulting 2008 U.S recession) is the main source of bias, the first sector to be hit in Mexico would be the export industry, in turn dominated by the *maquilas* which specialize in exporting assembled intermediate components from previously imported parts. Since the production of these in-bond industries is not meant for domestic (local) consumption, the negative impact of a U.S recession on the price of these internationally tradable goods is not really considered in our price data (not even in the Transportation Category since this category includes final rather than intermediate goods).

However, the drop in exports to the U.S and the potential shrinkage of these industries generates important income and substitution effects in consumption patterns in Mexico so that the

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Term $cov\left(Emig_{it}, \theta_{US,t}\right) < 0$ regardless of the relative tradable vs. non-tradable composition of product categories. Hence, the sign of the bias depends on δ^{NT}, the coefficient reflecting the adverse shock's ($\theta_{US,t}$) impact on the prices of non-tradables. We safely assume that $\delta^{NT} < 0$ for the same reasons as in footnote 19.

differential magnitudes of the bias can be explained through demand-side causations. As economic conditions deteriorate in Mexico due to reduced trade, households experience reductions in their income and so consume less luxury goods and services, the majority of which are precisely confined to the three categories for which the magnitude of the bias was the largest. For example, the Education & Leisure classification includes the full offerings of the tourism and entertainment industry, additionally it incorporates prices of private education which is also a superior good. Similarly, the Other Services category includes dinning and other specialized services. Non-necessities such as cosmetic, comfort, and care services are contained in the Health & Personal Care category. Thus, the price indices in these categories seem to experience a larger negative effect in response to a U.S shock via the expected reduction in the local demand for non-tradable (typically luxury goods) resulting from lower incomes.

Additionally, emigration becomes a less attractive investment during bad economic times in the U.S.; hence, would-be migrants, who would migrate in the absence of U.S shock but decide not to emigrate in its presence, could excerpt greater downward pressure in wages (and thus prices) by making the local city-labor supplies larger than what backward looking employers would have expected. This U.S-shock-induced, negative labor supply effect on wages could be even more pronounced in the types of service industries described above especially if the U.S shock primarily hits the Mexican manufacturing industry hampering its ability to absorb any labor and potentially leading it to lay-off additional workers. Further, since the pattern of internal migration in Mexico goes from rural to urban localities and our analysis is restricted to urban agglomerations, it is unlikely that the would-be-migrants stocks (who were expected to leave) get hired in the agriculture sector. Similarly, we could argue that if we would-be-migrants hold similar jobs at origin and destination, then, by not deciding to emigrate they would decrease wages in low-skilled services specifically within these 3 sectors, enlarging the bias of their naïve OLS estimates.

6.2) Mechanisms' Assessment

Now that we have clarified the mechanisms behind the bias in the OLS estimates, we can proceed to explore more in-depth the actual causation and channels through which a city's

proportion of households sending a migrant affects categorical price indices. The understanding of the source of emigration's effect on price will also help us better appreciate the welfare implications of the results across different income (education) levels of the population.

Supply-Side Channel

The labor supply channel described in section 4 implies a positive causation between emigration and prices via production costs. However, all the IV estimates presented in Table 6 are negative (see columns 2 and 4). Additionally, the comparison of the two IV columns shows that the majority of the β_{IV}^{NT} coefficients found in column 4 (all but those of Housing and Public Administration services) had larger magnitudes (higher absolute value) than the IV estimates of the full categories. This could insinuate that emigration's causal impact on the *tradable components* of the broad classifications is actually positive, thus explaining why the results for regressions including both tradable and non-tradable generic concepts are less negative that those shown in column 4 where tradables are largely left out. Nonetheless, as was mentioned in the conceptual framework, tradable goods prices are theoretically less sensitive to local labor-supply-side conditions, indeed their labor costs are determined via (inter) national market considerations and their prices are primarily driven by local demand factors. Thus, even if the relationship between tradable goods and emigration was to be positive we don't expect it to reflect the labor-cost mechanism. Overall the results in Table 6 do not allow us to argue that the changes induced through emigration to a city's the labor force endowment is the main channel underlying the impact on price indices.

Demand-Side Mechanisms

The first demand-side mechanism proposed in section 4 speaks of a negative relationship between emigration and prices due to changes in the number of consumers per city. As more and more households per city send a migrant to the U.S, and assuming all other factors remain constant, the reduced number of consumers per city adversely affects aggregate volumes of quantities demanded across all product categories. If supply does not contract to meet the ceteris paribus reduced city-aggregate demands (as is likely in the short-run), excess supply of goods puts downward pressure on the price indices. The sign of the IV estimates reported in the

baseline results of Table 6 seem to validate the partial inverse relationship between emigration and prices implied through this *volume of consumers* mechanism.

Intuitively, this channel would also suggest larger downward pressures on the price indices of the product categories more likely to be consumed by the typical migrant, which in turn depend on the pattern of migrant self-selection. As I already noted, the emigration data I use does not provide details on the skill or education level of migrants. We can nevertheless make conjectures based on the Mexican migration literature's findings. If we assume the prevailing pattern is one of intermediate-low to low self- selection[22] it would mean that those household members more prone to migrate have at the most completed High School (between 7-12 years of schooling if intermediate selection into migration and 0-12 years of schooling if intermediate-low to negative self-selection). To better determine how the interplay between an emigration-induced reduction in the consumer base and selection into emigration affect specific price index categories, I refer to the average expenditure shares per schooling type for each category presented in Table 7.

From Table 7 it is possible to estimate that households led by members in the schooling group to which the typical migrant most likely belongs (rows 1 and 2 under *Average Across Education Level* in above table) expend the largest share of their budget (about 70%) on the three categories: Food, Beverages & Tobacco; Housing; and Transportation. Conversely, they spend the least (~6% of total income) on Clothing, Shoes & Accessories and on the specialized services included in the Other Services category. The reminder 24% of their budget is distributed (by order of importance) among Health & Personal Care; Education & Leisure; and Domestic Appliances & Furniture. From the above, we would expect to see the most negative coefficients or largest $|\beta_{IV's}|$ in the Food; Housing; and Transportation categories, as household heads within the *–at most High School Completed-* schooling group emigrate (of course assuming expenditure shares per category are held constant). However, this is not what the regression results show.

[22] As suggested by Chiquiar & Hanson (2005), McKenzie & Rapoport (2010), Munshi (2003) & others previously cited in prior sections of this paper.

TABLE 7

Mean Expenditure Shares per Category of Goods Consumed by Education Level of Household Head

		Consumption Good Categories							
		Food, Bev. &Tobacco	***Clothing & Accessories***	***Housing***	***Domestic App. & Furniture***	***Health & Personal care***	***Transport***	***Education & Leisure***	***Other Services***
Level Achieved & Schooling years									
None<...≤ Preschool	**0-Preschool**	49.75%	5.26%	14.06%	6.87%	9.94%	8.52%	4.78%	0.82%
Preschool < ...≤ Elementary	**1-6 years**	45.13%	5.32%	14.78%	6.39%	9.63%	11.06%	6.89%	0.81%
Elementary< ...≤ Junior High	**7-9 years**	40.37%	5.72%	15.16%	5.78%	9.20%	12.81%	10.06%	0.91%
Junior High < ...≤ Senior High (High School)	**10-12 years**	37.46%	5.84%	16.10%	5.86%	8.53%	13.15%	11.79%	1.27%
High School< ...≤ College Graduate	**13-16 years**	30.64%	5.94%	17.51%	6.89%	8.35%	14.01%	14.32%	2.35%
College Degree< ...≤ Doctorate	**16+ years**	24.61%	5.22%	16.86%	8.71%	7.62%	14.01%	18.52%	4.43%
Level Achieved & Schooling years		**Average Across Education Level**							
[1]*None< ...≤ Senior High (High School)*	[1]**0-12 years**	43.18%	5.54%	15.03%	6.22%	9.32%	11.38%	8.38%	0.95%
[2]*Elementary< ...≤ Senior High (High School)*	[2]**7-12 years**	43.18%	5.54%	15.03%	6.22%	9.32%	11.38%	8.38%	0.95%
Total Across all Education Levels	**All years**	37.99%	5.55%	15.75%	6.75%	8.88%	12.26%	11.06%	1.76%

*Subcripts 1 and 2 refer to the schooling group to which potential emigrants most likely belong

*Subcript 1: schooling group of migrants if migrant selectivity is intermediate-low to low

*Subcript 2: schooling group of migrants if migrant selectivity is intermediate

Source: Based on National Household Survey of Income & Expenditures (ENIGH 2010)

Rather, according to Table 7, the ranking of the complete categorical price indices per their sensitivity to emigration (magnitude of IV estimates) is as follows: [1)] Other Services, [2)] Education & Leisure, [3)] Health & Personal Care, [4)] Food, Bev. & Tobacco, [5)] Transportation, [6)] Housing, [7)] Clothing, Shoes & Accessories, and [8)] Domestic Furniture, Appliances & Utensils. Further, the ranking of IV estimates when considering only the non-tradable components in each category was equal to the ordering of the complete price index classifications (potentially implying that the price indices negative elasticity to emigration is not primarily driven by the relative tradable vs. non-tradable composition of each category, which corroborates the observations made on the bias).

How can we reconcile the evidence that the price index categories experiencing the largest downward pressure as a result of an increased emigration (namely specialized Services and Education and Leisure) are not the prime goods demanded by the majority of leaving household members?

One possible explanation is related to the relative proportion of schooling types among both the population that emigrates to the U.S, and those that stay in Mexico. Based on data provided by ENIGH 2010, Table A-4 in the Appendix provides information on the distribution of Mexican Households according to the highest level of education completed by the household head. We see that 73.5% of Mexican households were led by High School dropouts and 85.5% by members that had at most completed High School. Hence, even if in absolute numbers, the majority of Mexican migrants to the U.S have at most 12 years of schooling, the abundance of High School dropouts in the overall population reduces the negative impact that emigration has on their total population relative stock, thus diluting the magnitude of the potential negative effects on the aggregate demands for the goods most preferred by this consumer-type (relative to those of consumers from other schooling groups). By the same token, since only 14.5 % of households was led by heads with more than 12 years of schooling (only 1.9% of total has more than a Bachelors' Degree) even very moderate outflows of the more educated schooling types are likely to have large negative effects on the demand and thus price of the product and service categories that predominantly rely on the consumption appetites of the most educated (and wealthier) population.

The regression results presented in Table 6 above, show that the price indices of the Other Services and the Education & Leisure categories experienced the largest downward pressure due to emigration. At the same time, the information provided in Table 7 allows us to estimate that 64 percent of total expenditures on the Other Services category and about 50 percent of total expenditures on Education & Leisure stem from the *more-than- High School* schooling groups. Thus, even a small reduction in the number of these type of consumers due to emigration would induce a large contraction of aggregate demand for the 2 categories, triggering their larger price decline. It is important to note that even though the data I use does not provide specific details on the education level of migrants, since the data is mainly confined to urban localities, we can infer that there would be at least some households in the upper-end of the schooling (income) distribution with a household member emigrating to the U.S. making this explanation plausible.

SECTION 7

Robustness Checks

To assess the robustness of the empirical strategy used in this paper, I expand the baseline specification to include two main additional controls: the log five year average per capita state GDP (see second term in equations below) and the log proportion of households per city that received remittances within the five years prior to the each census date (third term in equation 4). The specifications used for robustness are:

$$\ln P_{it} = \beta \ln\left(\frac{Hhds_{it}^{e}}{Total\ Hhds_{it}}\right) + \vartheta \ln GDPpc_{jt} + \varphi_i + \gamma_t + \varepsilon_{it} \qquad [3]$$

$$\ln P_{it} = \beta \ln\left(\frac{Hhds_{it}^{e}}{Total\ Hhds_{it}}\right) + \vartheta \ln GDPpc_{jt} + \mu \ln\left(\frac{Hhds_{it}^{r}}{Total\ Hhds_{it}}\right) + \varphi_i + \gamma_t + \varepsilon_{it} \qquad [4]$$

I use constant terms (inflation free) state GDP per capita data in order to control for the reverse causality between price growth and income per capita. As before, subscript *i* denotes each of the 45 cities for which the analysis is conducted and *j* denotes each of the total 32 states in Mexico for which there are historical emigration rates to help construct the instrument; and *t* denotes the two quinquenia. Superscripts *e* and *r* code for households with emigrants and households receiving remittances in city *i* during period *t*. City and time fixed effects are given by φ_i and γ_t respectively and ε_{it} is the idiosyncratic error.

As in the baseline specification, I test the robustness of the results for each of the eight categories of both sets of prices. The complete categorical indices' robustness results are presented in Table 8 below while the results for the checks using the non-tradable components price indices are contained in table A-5 of the Appendix. The robustness results of both tables comprise six sets of estimates per product category. I first report the baseline results from specification [1] included in Table 6, then I give results for the specification found in [3] where GDP per capita is the only additional control, finally I present the results for the extended specification found in [4]. I perform this empirical exercise using both the standard OLS and 2SLS approaches.

TABLE 8

1. Food, Beverages & Tobacco							
		OLS_{Cat1}			IV_{Cat1}		
Dependent Variable: $ln(\ Cat1\ Price\ Index)$		(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$		-0.0112	-0.0115	-0.0107	-1.016***	-0.676***	-0.683**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$		(0.0213)	(0.0213)	(0.0209)	(0.0903)	(0.0736)	(0.287)
$Ln(period\ avg.state\ GDP\ per\ capita)$			0.0178	0.0134		0.0392	0.0412
			(0.0239)	(0.0214)		(0.967)	(1.055)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$				-0.0284			0.0112
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$				(0.0320)			(0.353)
R^2	R^2	0.998	0.998	0.998	0.817	0.919	0.918
City Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
2. Clothing, Shoes & Accessories							
		OLS_{Cat2}			IV_{Cat2}		
Dependent Variable: $ln(\ Cat2\ Price\ Index)$		(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$		-0.0326	-0.0333	-0.0301	-0.831***	-0.618***	-0.572**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$		(0.0748)	(0.0754)	(0.0734)	(0.0829)	(0.0807)	(0.257)
$Ln(period\ avg.state\ GDP\ per\ capita)$			0.0509	0.0338		0.0698	0.0562
			(0.139)	(0.113)		(1.103)	(1.102)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$				-0.110			-0.0785
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$				(0.100)			(0.375)
	R^2	0.956	0.956	0.958	0.790	0.875	0.888
City Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
3. Housing							
		OLS_{Cat3}			IV_{Cat3}		
Dependent Variable: $ln(\ Cat3\ Price\ Index)$		(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$		0.00619	0.00579	0.00674	-0.986***	-0.658***	-0.661**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$		(0.0475)	(0.0476)	(0.0508)	(0.0973)	(0.0824)	(0.292)
$Ln(period\ avg.state\ GDP\ per\ capita)$			0.0277	0.0225		0.0491	0.0501
			(0.0860)	(0.0782)		(1.115)	(1.213)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$				-0.0334			0.00592
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$				(0.0619)			(0.470)
	R^2	0.991	0.991	0.991	0.805	0.909	0.909
City Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

4. Domestic Furniture, Appliances & Utensils

	OLS_{Cat4}			IV_{Cat4}		
Dependent Variable: $ln(\ Cat4\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	0.0259	0.0262	0.0264	-0.677***	-0.753***	-0.776**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0649)	(0.0661)	(0.0674)	(0.0713)	(0.0873)	(0.362)
$Ln(period\ avg.state\ GDP\ per\ capita)$		-0.0177	-0.0191		0.00744	0.0140
		(0.0577)	(0.0621)		(1.260)	(1.397)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$			-			0.0381
			0.00907			
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0669)			(0.560)
R^2	0.970	0.970	0.970	0.775	0.748	0.736
City Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

5. Health & Personal Care

	OLS_{Cat5}			IV_{Cat5}		
Dependent Variable: $ln(\ Cat5\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	-	-0.00858	-	-1.063***	-0.676***	-0.721**
	0.00823		0.00959			
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0551)	(0.0559)	(0.0574)	(0.0949)	(0.0660)	(0.290)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.0240	0.0294		0.0456	0.0589
		(0.0444)	(0.0457)		(1.002)	(1.137)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$			0.0352			0.0770
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0746)			(0.408)
R^2	0.991	0.991	0.991	0.810	0.919	0.910
City Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

6. Transportation

	OLS_{Cat6}			IV_{Cat6}		
Dependent Variable: $ln(\ Cat6\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	0.0494	0.0492	0.0501	-0.994***	-0.692***	-0.701**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0318)	(0.0325)	(0.0317)	(0.0952)	(0.0866)	(0.305)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.0106	0.00625		0.0346	0.0373
		(0.0396)	(0.0474)		(1.118)	(1.220)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$			-0.0285			0.0157
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0493)			(0.468)
R^2	0.996	0.996	0.996	0.793	0.895	0.892
City Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

7. Education & Leisure							
		OLS_{Cat7}			IV_{Cat7}		
Dependent Variable: $ln(\ Cat7\ Price\ Index)$		(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$		0.0470	0.0450	0.0480	-1.179***	-0.451***	-0.407**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$		(0.0457)	(0.0455)	(0.0417)	(0.116)	(0.0635)	(0.185)
$Ln(period\ avg.state\ GDP\ per\ capita)$			0.137***	0.121*		0.153	0.140
			(0.0325)	(0.0602)		(0.867)	(0.872)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$				-0.102			-0.0754
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$				(0.0695)			(0.314)
	R^2	0.992	0.994	0.994	0.794	0.961	0.967
City Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

8. Other Services							
		OLS_{Cat8}			IV_{Cat8}		
Dependent Variable: $ln(\ Cat8\ Price\ Index)$		(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$		0.0665	0.0650	0.0667	-1.187***	-0.512***	-0.497*
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$		(0.0608)	(0.0606)	(0.0630)	(0.117)	(0.0654)	(0.256)
$Ln(period\ avg.state\ GDP\ per\ capita)$			0.101	0.0922		0.120	0.116
			(0.0837)	(0.0743)		(0.987)	(1.044)
$Ln(share\ of\ Hhds.with\ remittance\ receipt$				-0.0580			-0.0248
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$				(0.0883)			(0.237)
	R^2	0.986	0.986	0.986	0.782	0.944	0.946
City Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*

Year dummy corresponds to the 1995-2000 quinquennium.
Standard errors clustered at state level are reported in parentheses:
* Significant at the 10 percent level (p<0.1)
**Significant at the 5 percent level (p<0.05)
***Significant at the 1 percent level (p<0.01)

7.1) Robustness to Per Capita GDP

To empirically assess robustness to per capita GDP I use the specification found in [3]. The term $\vartheta \ln GDPpc_{jt}$ is included as an additional measure to control for and potentially extract from our main coefficient of interest, β, the effects on prices of differential degrees of development and/or unevenly distributed positive economic climate among cities.

Controlling for the log five-year average per capita state GDP's also helps to ensure that the strength of chosen instrument (based on the 1950's rates) as a predictor of recent quinquinnia emigration is robust. Indeed, while the first stage results presented in Table 5 show that the instrument's predictive magnitude decreases when adding the per capita state GDP's, the decrease is not substantial and the instrument remains a significant predictor at the 1% level. Additionally, as expected, the first stage results' coefficient for the log GDP per capita averages was positive but insignificant.

As regards to the robustness of the second stage results, I already noted in section 5 that the log average GDP per capita imperfectly controls for the threat to the exclusion restriction posed by the potential positive developmental (and thus price) effects that high, past and lingering, trends of Mexican international migration have on sending communities (in addition to their direct effects on current emigration). Ideally, we would need to use historic measures of development to validate orthogonality; however due to data availability restrictions and the high degree of auto-correlation between present and past levels of GDP per capita, we can assume that the log five-year average per capita state GDP's do allow to diminish the threat to the exclusion restriction at least marginally. Also, I already provided some evidence in section 5 pointing to the absence of a significant relationship between my instrument and the economic prosperity aspects captured via this indicator.

Impact of control ($ln\, GDPpc_{jt}$) on Price Indices:

The coefficient ϑ captures the ceteris paribus partial effect of the log five year average per capita GDP's on the log price indices, it can therefore be thought of as the elasticity of price indices to the local quinquennial period average income per capita. We expect $\vartheta > 0$ to reflect that cities with higher levels of development (or better economic conditions) tend to have higher prices. Additionally, since ϑ partly captures the direct positive, income-induced demand effects that GDP per capita has on prices, intuitively we would expect ϑ to be higher in magnitude for goods categories with a higher income elasticity of demand.

We can also think of a sort of Balassa-Samuelson effect through which booming (richer) cities would be expected to experience higher growth in their categorical price indices. Moreover, according to the Balassa-Samuelson story, non-tradables are typically more expensive in richer

regions therefore the positive association between GDP per capita and price indices should be stronger when considering only the non-tradables' price indices. Columns 2 and 5 in Table 8 corroborate our theoretical expectations as the majority of the OLS and 2SLS coefficients for the GDP per capita variable were positive (most $\vartheta_{OLS} > 0$ while all of the ϑ_{IV} estimates are positive); yet under both methodologies the log average GDP per capita variable was insignificant.[23] Columns 2 and 5 also show that the coefficient on log GDP per capita was the largest for the Education & Leisure and Other Services categories, both of which are composed of consumption concepts with high income elasticities of demand. The comparison between results from the full product categories (Table 8) and those of only non-tradables (Appendix Table A-5) does not reveal any Balassa-Samuelson effect across cities: only three out of the eight categories had a bigger ϑ coefficient when only non-tradable components were considered.

Impact of control on the Emigration- Price Relationship:

As regards to the impact of the log five year average per capita state GDP's on the relationship between emigration and prices (the main interest of the study), both tables show that the results presented in section 6 were robust to including $\vartheta \ln GDPpc_{jt}$ to the baseline specification. The signs of our coefficients of interest (β_{OLS} and β_{IV}) were maintained. As in the baseline, the IV estimates revealed a significant (at 1% level) negative effect of emigration on each of the eight categorical price indices. Also, all the OLS estimates were larger than the IV estimates (β_{OLS} were either positive or less negative than β_{IV} which were all negative), thus the direction of the bias was also robust to adding the log average GDP per capita as control. Furthermore, results show that for all the price categories for which $\beta_{OLS} > 0$, the inclusion of the log average GDP per capita as control reduced their magnitude, while for the categories with $\beta_{OLS} < 0$, the addition of the GDP per capita variable made the estimates more negative. This suggests that in the baseline OLS specification from equation [1], the coefficient on emigration was capturing, in addition to its own impact, the positive relationship between per capita GDP and prices.

Moreover, from a comparison of columns 4 and 5, we observe that the magnitude of the negative effect suggested by the IV estimates decreased with the addition of $ln\, GDPpc_{jt}$, which in unison

[23] The per capita five year average GDP coefficient was only highly significant in the OLS results of the Education and Leisure category; however, its significance was lost once the endogenous emigration variable was instrumented.

with its effects on the β_{OLS} coefficients mentioned above, explains why the overall bias in the naïve OLS estimates declines with the inclusion of the log GDP per capita variable. This decrease in the magnitude of the negative effect of emigration on prices (decrease in absolute value of $\beta_{IV}$from column 4 to 5) can be explained by the fact that in the baseline 2SLS specification, $ln\,GDPpc_{jt}$ is an omitted factor positively correlated to prices and negatively correlated with emigration. Thus, its exclusion causes emigration's IV coefficients in column 4 to compound this negative bias to their own negative effect leading to an overestimation of the negative effect on prices when the log GDP per capita effect is not controlled for. This makes column 4's $\beta_{IV's}$ more negative than those in column 5 where $ln\,GDPpc_{jt}$ is included. Robustness results for the non-tradable components set of price indices presented in Table A-5 of the Appendix were analogous.

7.2) Robustness to share of households per city receiving remittances

To assess the robustness of this paper's findings to our remittance indicator I use the extended specification given in equation [4]; the results of this check for each set of price indices are reported in columns 3 and 6 of Tables 8 and A-5. The main purpose of extending the baseline specification to include the proportion of households with remittance receipts per quinquennia is to clarify the channels through which emigration affects prices.

In the conceptual framework section I noted that to the extent that emigration entails a greater influx of remittances to migrants' origin communities, there would be a positive association between emigration and prices. Nonetheless, the core empirical results of the paper have rejected this mechanism since we have indeed found evidence of a significant negative relationship between the share of households per city with a member migrating to the U.S and the city level categorical price indices.

Part of weakness of this first argument is that it does not fit the nature of our emigration variable which rather than measuring the proportion of households with a migrant member whom emigrated *at any point in time*, it measures the proportion of households who send a migrant to the U.S *within each five year period* prior to the census date. The difference between the two definitions is that while the former can include households with a member that migrated *more*

than five years ago, the latter captures exclusively the proportion of households with a migrant that has been living in the U.S *at the most* for five years. This difference is crucial in understanding the interplay between emigration, remittances, and prices since it is more likely that older cohorts of migrants, rather than new arrivals, send more substantial and continuous flows to their family members remaining in Mexico because they have had time to network, and thus access more stable, better paying jobs. [24] An additional caveat of this initial argument is that it assumes that emigration affects prices *through* remittances, failing to acknowledge that emigration and remittances could have separate direct effects on prices.

Given the empirical findings of the paper and the nature of CONAPO's emigration and remittance indicators, through specification [4] I check the robustness of emigration's *direct* effects on prices despite of and in addition to its relationship with remittances. More specifically, the term $\mu\, ln(Hhds_{it}^{r}/Total\ Hhds_{it})$ will help verify the robustness of the channel I proposed in section 5 as the main explanation to the paper's core empirical finding, namely: the *volume of consumers* (consumer base) channel which posits that as the number of consumers shrinks when more households decide to send migrants to the U.S., the resulting reductions in aggregate demand put downward pressure on price indices.

Impact of control ($ln(Hhds_{it}^{r}/Total\ Hhds_{it})$) on Price Indices:

The coefficient μ reflects the ceteris paribus elasticity of price indices to the proportion of households per city receiving remittances within each five year period. Remittances induce both income and substitution effects. Assuming our categorical price indices contain a relatively higher proportion of normal good concepts than of inferior goods (which we can safely accept), we expect to see a positive elasticity ($\mu > 0$) across all the price index categories as remittance receipts or *migradollars* increase household's disposable income allowing them to consume more of all types of normal goods and services. Via substitution effects we expect the magnitudes of μ to differ among our categorical price indices as eased financial constraints allow households not only to better cover their basic needs but also to derive utility from previously

[24] See Munshi (2003) for a more detailed analysis on the important role of the oldest migrant networks' members.

non-affordable non-necessities.[25] Through this effect, we would expect to see a greater magnitude μ coefficient for the price index categories with the highest relative shares of superior goods and concepts (or the least relative shares of inferior goods) such as Education & Leisure, Other Services, Health & Personal Care, and Domestic Furniture, Appliances & Utensils because

Contrary to the theoretical expectations explained above, column 3 in Table 8 shows that the majority of the OLS coefficients of our remittance variable were negative (the only category for which $\mu_{OLS} > 0$ was Health & Personal Care. The 2SLS coefficients for the log share of households per city receiving remittances shown in column 6 were more in line with the theoretical expectations as they were positive for five out of the eight categories of price indices ($\mu_{IV} < 0$ for: Education & Leisure; Clothing, Shoes & Accessories; and Other Services).

The two categories for which the magnitude of the 2SLS regression remittance coefficient was the greatest were Health & Personal Care (.0770) and Domestic Furniture, Appliances & Utensils (.0381). One way to explain the higher positive coefficient of the remittance variable on the Health & Personal Care product category is through emigration's effects on the composition of households. For example, if emigration changes family structures so that more and more staying households consist of elderly taking care of grandchildren as their parents emigrate, then it is likely that a large proportion of remittance receipts are spent in Health-related consumption. However, the negative association between our remittance variable and the Education & Leisure category's price index weakens this argument. The explanation for the larger magnitude μ_{IV} coefficient for the Domestic Furniture, Appliances & Utensils price index seems more straightforward if we accept the view proposed by authors such as Douglas Massey that in Mexico, good proportion of remittance recipients used the funds for conspicuous consumption purposes.

Regardless of their counterintuitive sign and small magnitudes, all the coefficients of our remittance variable (both in the OLS and 2SLS regressions) were not significant.

[25] The substitution effects in turn depend on the specific socioeconomic level of recipient households, a detail not provided by our data. However, again based on the literature's finding on the pattern of migrant self-selection in Mexico, we can assume that the majority of recipient households come from the middle-low to lower tail of the income distribution.

Impact of control on the Emigration- Price Relationship:

From column 6 of Table 8 and Table A-5 in the Appendix, we observe that the IV coefficients of our main explanatory variable $\ln(Hhds^{e}_{it}/Total\ Hhds_{it})$ are still negative across the eight categories of both sets of price indices (complete and only non-tradable indices). However, the results from Table 8 show that the significance of the eight IV coefficients of our variable of interest fell to the 5 % level. Controlling for the log proportion of households receiving remittances affected the significance of the $\beta_{IV's}$ more when the price indices focusing on non-tradables are used as dependent variable. For example, IV results on column 6, of Table A-5 show that the negative effect of the log share of households sending a migrant on the price index of Domestic Furniture, Appliances & Utensils became insignificant and the effects of our emigration variable on the price index of Other Services were only significant at the 10% level.

To determine whether remittances play an important role in the story behind Mexican emigration and prices I have so far proposed, we need to understand whether our remittance indicator is an important omitted variable. To analyze this it is useful to compare the IV coefficients from column 5 (where only GDP per capita is added to the baseline) to those of column 6 (where I also controlled for the remittance indicator). If the proportion of households per city receiving remittances within each quinquennia is an important omitted variable we should see changes in the magnitude of the β_{IV}coefficients reported in two columns. A priori, we would expect our remittance indicator to indeed be an important omitted variable in the baseline model presented by [1] (and in its extension [2]) because through income and substitution effects remittances can affect the categorical price indices.

The positive correlation between emigration and remittances is unequivocal. First, more emigration leads to more remittance receipts (with a time lag) as Mexican migrants get established in the U.S. Conversely, remittances can increase the number of households that decide to send a migrant both by easing up credit constraints in sending localities and by strengthening households' motivation to send a migrant when the conspicuous consumption behavior of remittance recipient households intensifies relative deprivation sentiments. It is clear that in both specifications excluding the remittance indicator ([1] and [2]) emigration would be correlated to the error ε_{it}.

The comparison of columns 5 and 6 show that the $\beta_{IV's}$ do change, yet the direction of the bias is not clear and depends on the sign of the effect that our remittance variable has on each specific price index. Theory would suggest that through an income effect, the bias would be positive causing us to underestimate the negative effect of emigration on price indices; in that case, the magnitude of the β_{IV} coefficient should be lower (less negative) in column 5 than in column 6. Table 8 results corroborated this theoretical expectation for five of the eight price indices. The opposite is observed for the categories: Education & Leisure; Clothing, Shoes & Accessories; and Other Services where the IV estimate in column 5 had higher magnitude (was more negative), implying that the bias introduced by the omission of the remittance indicator was negative (this fits with the evidence on μ_{IV} described above, since $\mu_{IV} < 0$ for these same three categories).

The final puzzle is then to try to make sense of the counterintuitive finding that the relationship between an increased proportion of households per city receiving remittances on the city price indices of Education & Leisure; Clothing, Shoes & Accessories; and Other Services is negative. It could be that there is some colinearity between the emigration and remittance variables causing the coefficients of the remittance indicator (in both the OLS and IV regressions) to be spurious.

The dubious negative sign of the μ_{OLS} estimates across the majority of the categories, their sign change once the emigration variable was instrumented, and the spurious sign of the μ_{IV} estimates for the three categories mentioned above could be symptoms of multicolinearity between the remittance indicator and the exogenous component of the emigration variable (which comprises among other things the continuity of historic patterns of emigration). Strong, broad and persistent migrant networks not only drive current emigration but also help migrants in achieving better labor market outcomes in the U.S, thus facilitating remittance flows. It is therefore plausible that historical rates of emigration are also good predictors of the current proportion of household receiving remittances, ensuring with this some collinearity between the emigration and remittance variables. Correlation coefficients revealed high correlation between the remittance variable and the instrument as well as between the emigration variable and the remittance indicator. Additionally, the variance inflation factors revealed the presence of multicollineary

among the two, validating with this our explanation of the tricky results obtained through this check.

SECTION 8
Conclusions

Despite the vast number of studies analyzing the Mexico-U.S migratory phenomenon, the literature has thus far failed to assess the impact of the Mexican exodus on prices. This paper's evaluation of the effect that changes in the shares of households sending a migrant has on local sending area's price indices directly responds to this literature gap, opening up the floor to the discussion of new ways in which the Mexico-U.S migration affects the purchasing power and standards of living of the staying population.

Not only does the study help expand the Development Literature on migration's impact on source countries but it also expands the research frontier of the nascent Migration Literature on Prices which has thus far only focused on destination countries, and consequently, on the immigration and prices link. While the price data used did not benefit from the richness of store-level data, the use of categorical price indices facilitated the possibility to assess the mechanisms underlying emigration's effects prices.

The paper's empirical results showed that an increase in the shares of households deciding to send a migrant to the U.S had an unambiguous negative effect on local city categorical price indices. This negative effect of emigration on prices was observed across all of the eight broad price index classifications and was more pronounced for those categories with the largest share of non-tradable goods and services composition. The findings are theoretically plausible and can be explained through the downward pressure that reduced aggregate demands exert on (per product category) prices in response to their loss of consumers as more and more households decide to send a migrant to the U.S. Results were robust to controlling for average GDP per capita and for the city-shares of remittance recipient households.

The direct welfare implication of the results is that greater outflows can partially improve the real purchasing power of Mexican households through the reduction in prices. Additionally,

since the three price index categories experiencing the greatest sensitivity to emigration ([1)] Other Services, [2)] Education & Leisure [3)] Health & Personal Care) tend to be highly consumed by households in the upper end of the education distribution, the results seem to suggest that the real purchasing power gains resulting from emigration's negative impact on prices are likely to be more pronounced for the most highly educated (usually better-off) households.

The results echo other author's findings on the impact of emigration on the second key component of households' real purchasing power: wages. For example, using an individual skilled-cell Mishra (2004) showed that emigration increased wages in Mexico across all schooling types, with the largest increases amounting to those with more than a High School Degree. The nature our emigration data, rich in geographic detail but scant in terms of the educational profile of migrants, did not allow for the direct assessment of such wage effects. However, an interesting area of future research would be to try to combine both approaches to extend the present analysis so that it comprises the both key aspects of real purchasing power.

The lack of publicly available municipality level price data forced me to undertake the analysis of the link between emigration and prices at higher levels of geographic aggregation. Despite the urban bias in the price data, the current analysis can still serve as a starting reference point for wider scope assessments of the effects of Mexican emigration on the prices in migrants' communities of origin.

SECTION 9
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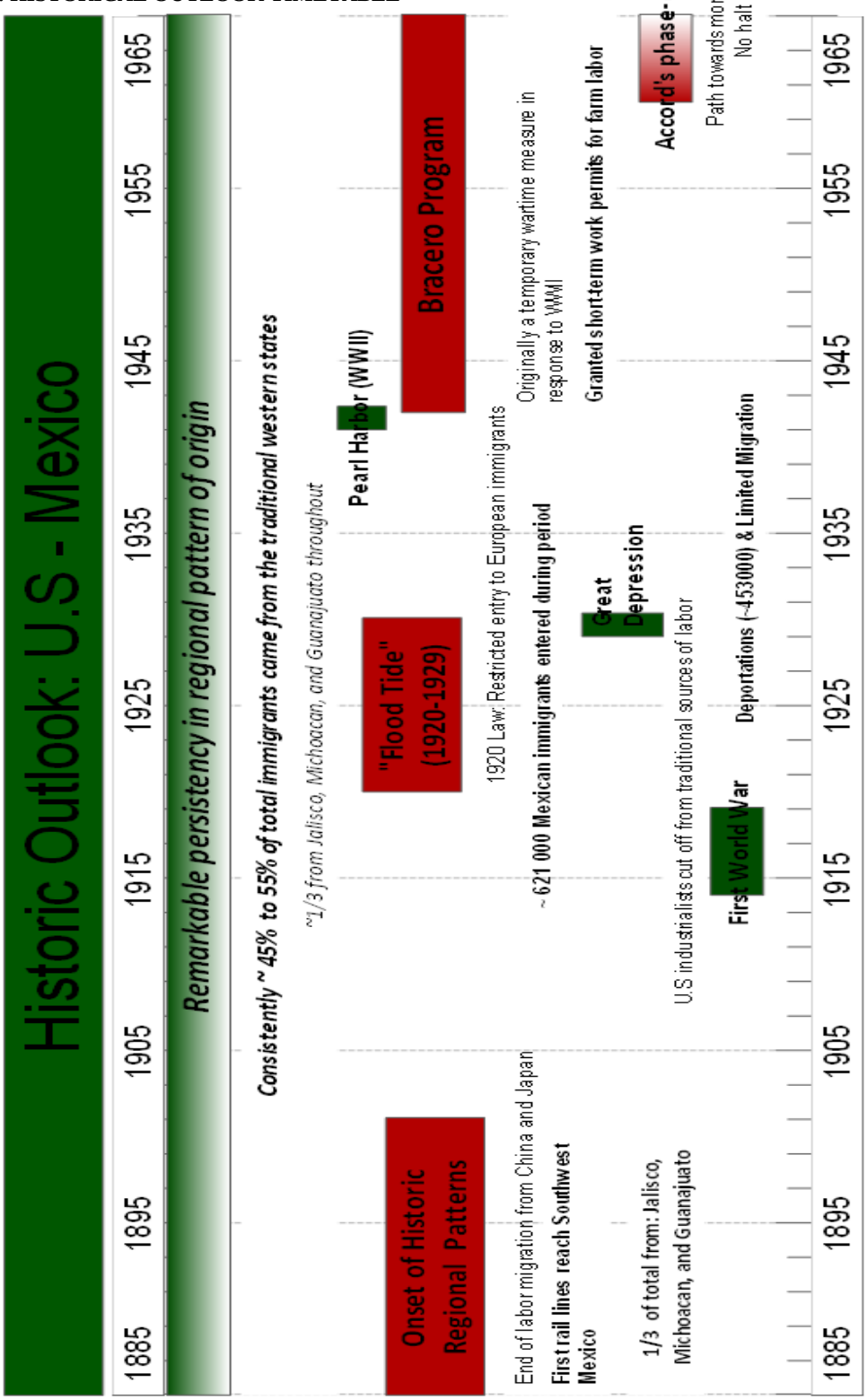
APPENDIX

FIGURE 1: HISTORICAL OUTLOOK TIMETABLE

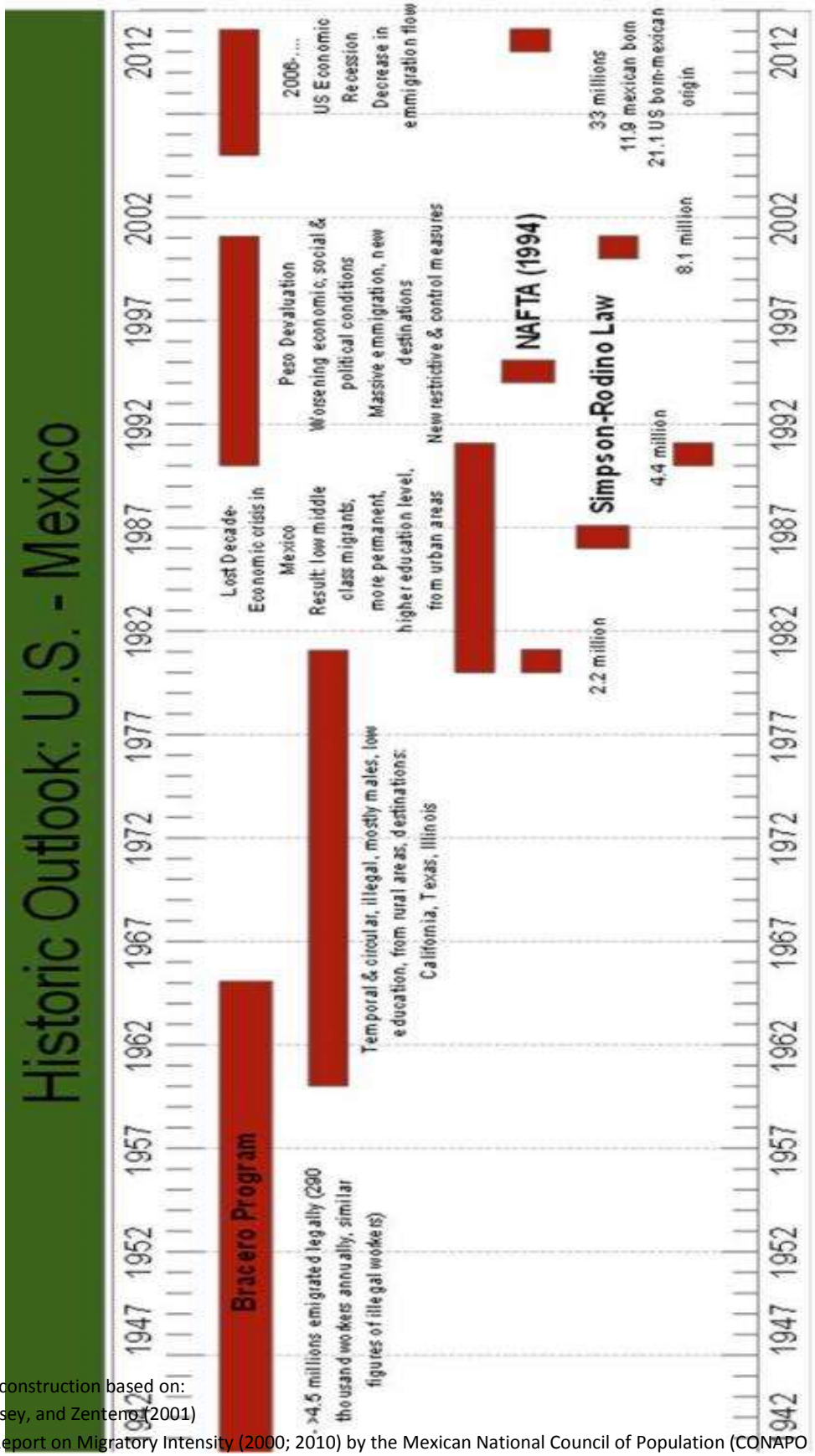


Source: Own construction based on:

Durand, Massey, and Zenteno (2001)

Mexico –US Report on Migratory Intensity (2000; 2010) by the Mexican National Council of Population (CONAPO

FIGURE 2: HISTORICAL OUTLOOK -Continued



Source: Own construction based on:
Durand, Massey, and Zenteno (2001)
Mexico –US Report on Migratory Intensity (2000; 2010) by the Mexican National Council of Population (CONAPO

TABLE A-1: PRICE DATA TRENDS (Per Price Index Category City Rankings according to greatest price growth)

Inflation per Product Category, City Rankings (per largest increase in prices)

Food, Beverages & Tobacco		Clothing, Shoes & Accessories		Housing		Furniture, Appliances & Utensils	
Durango	123%	*Monclova*	153%	*Veracruz*	135%	*Huatabampo*	139%
Veracruz	122%	*Huatabampo*	150%	*Tulancingo*	132%	*Queretaro*	89%
San Andres Tuxtla	121%	*Veracruz*	138%	*Cordoba*	131%	*Sto. Domingo Tehuantepec*	89%
Ciudad de Mexico	120%	*Queretaro*	134%	*Chihuahua*	129%	*Tapachula*	81%
Sto. Domingo Tehuantepec	119%	*Cordoba*	117%	*Tlaxcala*	128%	*Acapulco*	79%
La Paz	119%	*Puebla*	115%	*San Andres Tuxtla*	127%	***Jacona***	78%
Tampico	119%	*Tapachula*	112%	*Chetumal*	125%	*Merida*	77%
Matamoros	119%	*Villahermosa*	110%	*Puebla*	122%	*La Paz*	76%
Tepic	117%	*Chihuahua*	107%	*Villahermosa*	121%	*Tulancingo*	76%
Tepatitlan	116%	*Matamoros*	100%	***San Luis Potosi***	120%	*San Andres Tuxtla*	75%

Health & Personal Care		Transportation		Education & Entertainment		Other Services	
Sto. Domingo Tehuantepec	165%	*Ciudad Juarez*	136%	*Sto. Domingo Tehuantepec*	183%	*Queretaro*	206%
Colima	161%	***Tepic***	125%	*Campeche*	178%	***Aguascalientes***	202%
Tepatitlan	143%	*Tulancingo*	124%	*Veracruz*	172%	*Merida*	186%
Acapulco	142%	*Cordoba*	124%	*Puebla*	169%	*Matamoros*	177%
Tapachula	142%	*La Paz*	122%	*Oaxaca*	164%	*Villahermosa*	174%
Queretaro	137%	*Veracruz*	122%	*Villahermosa*	155%	***Tepic***	174%
Fresnillo	136%	*Tijuana*	117%	*Queretaro*	154%	*Veracruz*	166%
Huatabampo	136%	*Torreon*	115%	***Tepic***	152%	***Cortazar***	162%
Aguascalientes	131%	*Ciudad Acunia*	115%	*Mexicali*	151%	*Toluca*	156%
Tulancingo	130%	*Tapachula*	114%	***Tepatitlan***	149%	*Monterrey*	154%

**Cities within Historic Emigration Region in bold*

Source: CPI data from Central Bank of Mexico and INEGI

TABLE A-2: DEPENDENT VARIABLE WITHIN PERIOD SUMMARY STATISTICS

Product Category	Log Price Index- Statistics (1995-2000)				Log Price Index-Statistics (2005-2010)			
	Mean	*Standard Dev.*	*Min*	*Max*	*Mean*	*Standard Dev.*	*Min*	*Max*
Food, Beverages & Tobacco	3.69	0.04	3.61	3.79	4.42	0.02	4.36	4.46
Clothing, Shoes & Accessories	3.92	0.15	3.56	4.20	4.53	0.03	4.47	4.59
Housing	3.79	0.08	3.62	3.94	4.51	0.04	4.40	4.56
Domestic Furniture, Appliances & Utensils	4.00	0.11	3.50	4.19	4.49	0.03	4.38	4.55
Health & Personal Care	3.70	0.09	3.48	3.84	4.47	0.02	4.43	4.51
Transportation	3.72	0.06	3.56	3.83	4.45	0.03	4.37	4.51
Education & Entertainment	3.62	0.09	3.38	3.78	4.48	0.02	4.42	4.53
Other Services	3.60	0.12	3.36	3.85	4.47	0.03	4.39	4.53

Source: CPI data from Central Bank of Mexico and INEGI

TABLE A-2.1: NON-TRADABLE COMPONENTS PER PRICE INDEX CATEGORY

Category	Non-Tradable Component
Food, Beverage & Tobacco	- Locally precooked meals to take home and street fast-food (tacos, barbecue, etc)
Clothing, shoes & Accessories	- Cleaning and repair services (dry-cleaning, laundry, tailor and show repairs)
Housing	- Housecleaning, decoration and repair services
Domestic Appliances, Furniture & Utensils	- Locally carved wooden furniture and appliance repair services
Health & Personal Care	- Medical services (consults, screenings) - Beauty care and feel-good services (massages, and spa-hair salon type services)
Transportation	- Public transportation fares (metro and bus) - Vehicle maintenance and care services (washing, repair, improvement,) - Insurance Paperwork
Education & Leisure	- Education and tutoring services at all levels (includes private education) - All Services within tourism industry **Category is mostly made-up of services and non-tradables it only excludes highly tradable leisure –related goods** such as CD's and DVD's **as well as school supplies**
Other Services	- Professional services (accounting, business consulting, marketing, design, surveillance, etc) - Public Administration (bureaucratic) Services (passport, driving license procedure, business permits) - Funerals

TABLE A-3: FIRST STAGE RESULTS (Comparison of Historic Rates)

	Dependent Variable: $ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$					
	(1)	(2)	(3)	(4)	(5)	(6)
	Mexican Historic State Emigration Rates					
	1955: Bracero Program Period			1924: Flood Tide Period		
Instrument: $(Emig_{j1955}/Total\ Mig._{1955}) \times \sum_{j} Hhds^{e}_{jt}$	0.119***	0.116***	0.316*	0.153***	0.0557***	0.122
	(1.25e-08)	(0.0204)	(0.155)	(1.37e-08)	(0.0187)	(0.113)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.0323	0.0413		-0.0769	-0.102
		(0.216)	(0.233)		(0.329)	(0.326)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			0.0588			0.194
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.384)			(0.465)
City Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Period Fixed Effects	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Observations	90	90	90	86	86	86
R^2	0.960	0.960	0.960	0.955	0.955	0.956
F-Stat	9.0e+13	32.06	4.14	1.2e+14	8.91	1.16

Year dummy corresponds to the 1995-2000 quinquennium.
Standard errors clustered at state level are reported in parentheses:
* Significant at the 10 percent level (p<0.1)
**Significant at the 5 percent level (p<0.05)
***Significant at the 1 percent level (p<0.01)

FIGURE 3: FIRST STAGE INSTRUMENT'S COMPARISON (Scatterplots & Regression Lines)

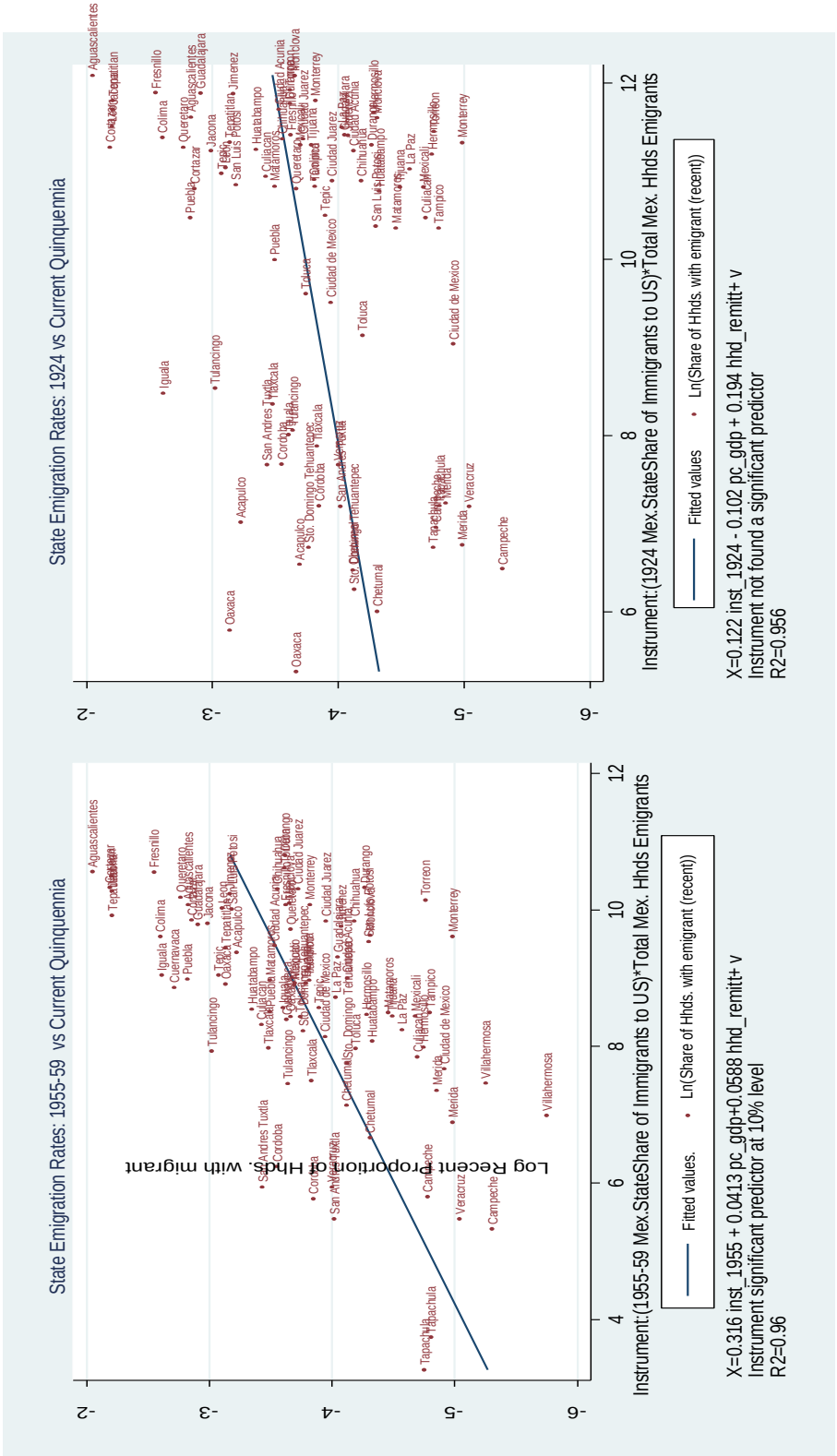


TABLE A-4: DISTRIBUTION OF MEXICAN HOUSEHOLDS BY EDUCATION LEVEL OF HOUSEHOLD HEAD

Level Achieved	Formal Education years	No. of Household Heads	Cum. Percentage	Population Proportion	
None<...≤ Preschool	**0-Preschool**	2,682,003	9.20%	9.2%	*******
Preschool < ...≤ Elementary	**1-6 years of schooling**	11,127,674	47.50%	38.3%	*****************************
Elementary< ...≤ Junior High	**7-9 years of schooling**	7,563,748	73.50%	26.0%	********************
Junior High < ...≤ Senior High (Highschool)	**10-12 years of schooling**	3,481,878	85.50%	12.0%	*********
Highschool< ...≤ College Graduate	**13-16 years of schooling**	3,659,917	98.10%	12.6%	**********
College Degree< ...≤ Doctorate	**Postgraduate (16+ years of school)**	559,112	100.00%	1.9%	*
		29,074,332		100.0%	

Source: National Household Survey of Income & Expenditures (ENIGH 2010)

TABLE A-5: ROBUSTNESS CHECK RESULTS (NON- TRADABLE COMPONENTS)

1. Food, Beverages & Tobacco	Non-tradable (service) Component					
	OLS_{Cat1}			IV_{Cat1}		
Dependent Variable: $ln(\ Cat1\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	0.0116	0.0117	0.0108	-1.109***	-0.722***	-0.768**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0557)	(0.0567)	(0.0568)	(0.104)	(0.0866)	(0.351)
$Ln(period\ avg.state\ GDP\ per\ capita)$		-0.00444	0.000568		0.0193	0.0327
		(0.0502)	(0.0556)		(1.177)	(1.328)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			0.0324			0.0782
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0788)			(0.382)
R^2	0.986	0.986	0.986	0.799	0.909	0.899
2. Clothing, Shoes & Accessories	Non-tradable (service) Component					
	OLS_{Cat2}			IV_{Cat2}		
Dependent Variable: $ln(\ Cat2\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	-0.0705	-0.0707	-0.0708	-1.066***	-0.695***	-0.719**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0926)	(0.0938)	(0.0950)	(0.109)	(0.0812)	(0.289)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.0119	0.0125		0.0321	0.0393
		(0.0677)	(0.0676)		(1.334)	(1.475)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			0.00381			0.0420
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.102)			(0.540)
R^2	0.959	0.959	0.959	0.802	0.902	0.898
3. Housing	Non-tradable (service) Component					
	OLS_{Cat3}			IV_{Cat3}		
Dependent Variable: $ln(\ Cat3\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	0.00903	0.00826	0.00868	-0.641***	-0.629***	-0.643**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0290)	(0.0284)	(0.0297)	(0.0614)	(0.0779)	(0.289)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.0532	0.0509		0.0738	0.0779
		(0.0545)	(0.0503)		(0.970)	(1.070)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			-0.0149			0.0234
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0402)			(0.416)
R^2	0.992	0.993	0.993	0.803	0.815	0.808
4. Domestic Furniture, Appliances & Utensils	Non-tradable (service) Component					
	OLS_{Cat4}			IV_{Cat4}		
Dependent Variable: $ln(\ Cat4\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	0.0810	0.0814	0.0866	-0.782***	-0.747***	-0.667
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.123)	(0.124)	(0.121)	(0.101)	(0.137)	(0.408)
$Ln(period\ avg.state\ GDP\ per\ capita)$		-0.0257	-0.0537		0.00108	-0.0225
		(0.197)	(0.144)		(1.645)	(1.631)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			-0.181			-0.137
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.148)			(0.611)
R^2	0.911	0.911	0.915	0.694	0.755	0.785

5. Health & Personal Care	Non-tradable (service) Component					
	OLS_{Cat5}			IV_{Cat5}		
Dependent Variable: $ln(\ Cat5\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	-0.0422	-0.0424	-0.0450	-1.193***	-0.691***	-0.770**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0943)	(0.0947)	(0.0956)	(0.115)	(0.0989)	(0.354)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.0104	0.0245		0.0314	0.0545
		(0.106)	(0.110)		(1.234)	(1.432)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			0.0915			0.134
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.159)			(0.514)
R^2	0.968	0.968	0.968	0.800	0.917	0.905

6. Transportation	Non-tradable (service) Component					
	OLS_{Cat6}			IV_{Cat6}		
Dependent Variable: $ln(\ Cat6\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	-0.0447	-0.0456	-0.0454	-1.106***	-0.609***	-0.625**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0568)	(0.0571)	(0.0579)	(0.101)	(0.0594)	(0.235)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.0615	0.0604		0.0797	0.0843
		(0.0590)	(0.0576)		(0.988)	(1.090)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			-0.00725			0.0268
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0781)			(0.410)
R^2	0.987	0.988	0.988	0.819	0.942	0.939

7. Education & Leisure	Non-tradable (service) Component					
	OLS_{Cat7}			IV_{Cat7}		
Dependent Variable: $ln(\ Cat7\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	0.0663	0.0634	0.0654	-1.313***	-0.337***	-0.311**
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0481)	(0.0472)	(0.0465)	(0.132)	(0.0821)	(0.145)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.197**	0.186		0.210	0.202
		(0.0920)	(0.113)		(0.793)	(0.821)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			-0.0680			-0.0459
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0819)			(0.273)
R^2	0.991	0.993	0.993	0.788	0.976	0.978

*8. Other Services: Restaurant Industry						
	OLS_{Cat8}			IV_{Cat8}		
Dependent Variable: $ln(\ Cat8\ Price\ Index)$	(1)	(2)	(3)	(4)	(5)	(6)
$Ln(\ share\ of\ Hhds.with\ emigrants)$	0.0695	0.0680	0.0693	-1.198***	-0.512***	-0.506*
$\ln(Hhds^{e}{}_{it}/Total\ Hhds_{it})$	(0.0618)	(0.0616)	(0.0640)	(0.119)	(0.0654)	(0.256)
$Ln(period\ avg.state\ GDP\ per\ capita)$		0.101	0.0943		0.120	0.118
		(0.0871)	(0.0816)		(1.007)	(1.077)
$Ln(share\ of\ Hhds.with\ remittance\ receipts)$			-0.0441			-0.0103
$\ln(Hhds^{r}{}_{it}/Total\ Hhds_{it})$			(0.0927)			(0.237)
R^2	0.984	0.985	0.985	0.780	0.943	0.94

All regressions include city dummies and a year dummy corresponding to the 1995-2000 quinquennium to account for fixed effects.
Standard errors clustered at state level are reported in parentheses:
* Significant at the 10 percent level ($p<0.1$)
**Significant at the 5 percent level ($p<0.05$)
***Significant at the 1 percent level ($p<0.01$)